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# Red Hill Creek Watershed Action Plan : first generation plan : final draft

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# Red Hill Creek Watershed Action Plan

# First Generation Plan

**FINAL DRAFT** April 1998

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# 1 A Collective Vision for the Watershed

In the year 2018.....

Our children and grandchildren toast those who, in spite of the challenges, collaborated to pass along a healthy and natural watershed in a caring and committed community.

Residents of this Watershed, both human and other species, mark 1998 as a great turning point for the Watershed, when decades of cumulative degradation began to be reversed. Concerns about human and industrial wastes in the creek waters is a fading memory, and the extreme flooding of the past has been replaced by a flow regime based on natural seasonal cycles.

The stream is once again healthy, supporting a diversity of aquatic life in a vibrant landscape. Natural areas are interconnected and evidence that wildlife is valued abounds.

Valley lands are especially valued as a place to demonstrate respect for all creatures and for the community to enjoy reasoned human activity.

Business, community and government organizations integrate their efforts to restore the natural capital wherever feasible, demonstrate sustainable development and pass on a well managed watershed to the next generation.

The Red Hill Creek Watershed has become known as one of the preferred places in Ontario to live because living in harmony with the natural environment is a priority..

The Watershed gives the community a sense of place so that shared stewardship is evidenced by the actions of all. All find renewal here and visitors come to learn the meaning of a commitment to sustainability.

This vision reflects ideas provided by the Stakeholders at gatherings on October 24 and November 6, 1997.

# The Watershed Planning Process

II

## The Purpose of the Watershed Plan

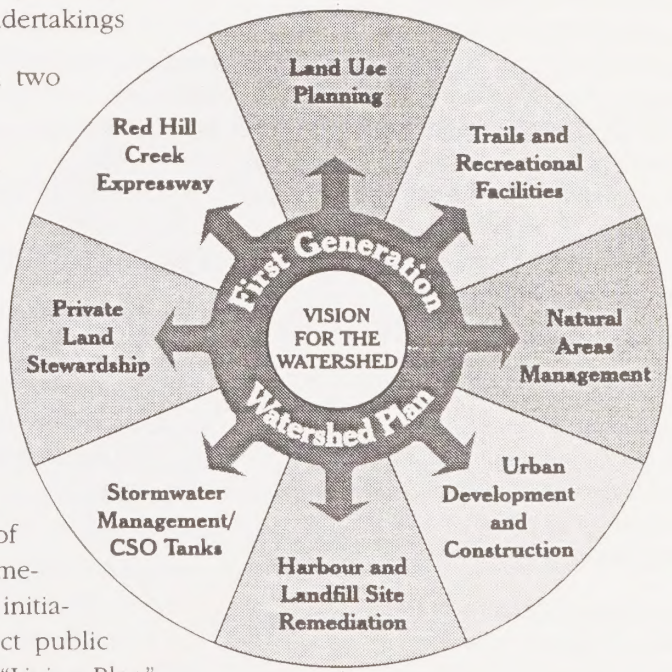
The purpose of this Watershed Plan is to provide goals, objectives and general guidance for land and infrastructure development, conservation, restoration and rehabilitation efforts within the Watershed that reflect community values and enjoy political support. Thus all decision makers will be better informed in addressing matters that affect the Red Hill Creek Watershed. The Plan will inform those working on the following planning, development and restoration initiatives:

- Study and Protection of Natural Features
- Restoration of Degraded and Humanly Modified Creeks and Streams
- Restoration of Wildlife Habitat
- Hiking/Cycling Trail Planning, Construction & Maintenance
- Ongoing Residential, Commercial and Industrial Construction
- Ongoing Recreational Facility Design, Construction and Maintenance
- Official Plan Reviews, Secondary Planning, Neighbourhood Planning, Master Planning
- Landfill Site Remediation (Assessment, Planning and Implementation)
- Windermere Basin Planning Process
- Combined Sewer Overflow Systems (Assessment, Design and Construction)
- Stormwater Management (Assessment, Design and Construction)
- Household and Property Management by Watershed Residents and Property Owners
- Implementation of the Hamilton Harbour Remedial Action Plan
- Transportation Projects including the Red Hill Creek Expressway
- Environmental Assessments Required for the Above Undertakings

The Watershed Planning process assists decision makers in two ways:

a) The "***State of the Watershed***" report and related technical background reports provide a convenient reference to key features and an overview of current conditions. Through this report, decision makers now have a shared understanding of the Watershed as a basis for their actions.

b) The Watershed Plan outlines the shared concerns of participants and describes the actions that should be taken to address those issues in the near future.




This is a First Generation Watershed Plan that reflects the set of issues that the Stakeholders Group felt should be addressed immediately. Issues to be considered in future Watershed planning initiatives are listed in the Appendix. All who contributed expect public authorities to take on the challenge of maintaining this as a "Living Plan", periodically reviewing and updating it in a similar collegial effort to that which led to this product.

## Ecosystem-based Planning and Watershed Plans

The Red Hill Creek Watershed is an ecosystem, consisting of air, land, water and living organisms, including humans, that all interact within the Watershed's boundaries.

Actions affecting one component, such as land, have effects on the others. In the past, decisions and actions have been taken in response to the needs of the human community without fully considering the impacts on the overall Red Hill Creek Watershed ecosystem. Over time this has resulted in the social, economic and environmental conditions and issues described in the ***"State of the Watershed"*** report and this Watershed Plan.

In response to world-wide concerns about the overall well being of ecosystems, new methods of planning are now being used at all levels of decision making. A watershed plan is one example of this "ecosystem-based" approach to planning. The ecosystem approach recognizes human dependence on and responsibility for natural features and functions. Unlike conventional planning, this approach sets objectives for ecosystem well-being along with social, economic and political goals. The boundaries used are based on natural processes such as drainage, not on human concerns, such as municipal boundaries.

Ecosystem-based planning also respects the fact that ecosystem interactions and functions are sometimes complex, unpredictable and limited in their ability to withstand stress from human activities. It requires an emphasis on long-term thinking and an understanding of the future effects of planning decisions. The actions recommended must be flexible enough to adapt to opportunities or problems which might not be obvious to us today. Ecosystem-based planning is consistent with Hamilton-Wentworth's sustainability goals as described in Vision 2020.

## Participants in the Watershed Planning Process

This Watershed Plan was developed through a multi-stakeholder process. In May 1997 approximately 30 Stakeholders representing community groups, municipalities, businesses, federal and provincial agencies and major institutions agreed to work together on a plan for the Red Hill Creek Watershed. Each stakeholder brought their organization's area of interest or mandated responsibility to the table. Other participants included individuals who were members of working groups established by the Stakeholders. The watershed planning process was sponsored and co-ordinated by the Region of Hamilton-Wentworth as part of its commitment to study the entire Watershed in order to assess the impacts of the proposed Red Hill Creek Expressway. A team of technical consultants reporting to the Region's staff co-ordinator conducted background studies and assisted participants throughout the process.

### The Niagara Escarpment and Ontario's First Ecosystem Based Plan

The most prominent geographical feature in the Red Hill Creek Watershed is the Niagara Escarpment, known locally as "the Mountain". The Escarpment curves through the Watershed. This limestone ridge stretches 725 km. from Queenston to the tip of the Bruce Peninsula. The rock formations of the Escarpment support a rich variety of plant and animal species. Some of these species are unusual or rare.

In 1973 the Provincial government recognized the importance of the Niagara Escarpment by creating legislation requiring a special plan to protect the unique natural ecosystems found along its length. The Niagara Escarpment Plan passed in 1985 was the first land use plan in Ontario to cover an area defined largely by natural, not political boundaries. In 1990 UNESCO (United Nations Educational, Scientific and Cultural Organization) added to the Escarpment's international significance by designating it a World Biosphere Reserve.

The Niagara Escarpment Plan plays an important part in protecting and conserving the natural features of the Red Hill Creek Watershed.

## The following were Participants in the Watershed Planning Process:

*(Names of Stakeholder Representatives are underlined)*

Hamilton Region Conservation Authority: Ben Vanderbrug, Bruce Duncan, Scott Konkle, Tony Horvat

Watershed Action Toward Environmental Responsibility: Linda Lukasik

Hamilton-Halton Homebuilder's Assoc.: Sergio Manchia, John Ariens, Scott Llewellyn, Adi Irani

Region of Hamilton-Wentworth: Jim Thoms, Judith Szekely, Eugene Chajka, Cathy Plosz, John Fortuna, Gary Moore, Chris Murray, Phil Jensen

Taro Aggregates: Wayne Jackson

Waterfront Regeneration Trust: Tija Luste, Tony Wagner

City of Stoney Creek: Paul Cripps, Marilyn Ridout, Paul Moore, Paul Smithson

Glendale Golf & Country Club: Mike Cote

Niagara Escarpment Commission: Anne Redish, Debbie Ramsay

Community Action Parkdale East: Al Churchill

McMaster University: Brian McCarry

Ontario Ministry of Environment & Energy: Stan Irwin, Frank Dobroff, Trevor Pawson, Tracy Kooiman, Dennis Corr

City of Hamilton: Victor Abraham, Joanne Hickey-Evans, Penny Ulbinas, Dave Cowan, Werner Plessel, Bill Janssen

Red Hill Developments: Bill Robertson

Fisheries & Oceans Canada: Ed DeBruyn

Hamilton Naturalist's Club: Brian McHattie

Township of Glanbrook: Morgan Pirie

Hamilton Mountain Sunrise Rotary Club: Greg Pyc

Mohawk College: Dick Raha

Urbex Engineering: Angelo Camaracci

Hamilton Harbour Remedial Action Plan: Louise Knox

Red Hill Volunteers: John Struger

Hamilton Board of Education: Stella Gibson

Fish & Wildlife Habitat Restoration Project: John Hall

Ontario Realty Corporation: Peter Scott

Hamilton-Wentworth Heritage Association: Stewart Leslie

Bruce Trail Association: Ian Reid

Ontario Ministry of Transportation: Fred Leech, Ram Dharamdial, Cindy Mitton-Wilkie, Sandy Nairn

Hamilton Mountain Rotary Club: Jack Lawlor

Bay Area Restoration Council: Konrad Brenner, Brent Bullough

Green Venture: Heather Donison

Hamilton Harbour Watershed Stewardship Program: Joanne Rzadki

H-W Region Cycling Committee: Clare Mitchell

## These Regional staff and consultants provided technical and coordination support:

Pamela Hubbard, Watershed Plan Coordinator

Mary Ellen Scanlon, Consultation and Communication Coordinator

Derek Doyle, UMA Engineering Ltd., Stakeholder Facilitator

Philips Planning and Engineering Limited

Dougan and Associates

C. Portt & Associates

Water Regime Investigations & Simulations Ltd.

Terraqua Investigations Limited

Archaeological Services Inc.

M.M. Dillon Limited

Dr. George Dixon

Peto McCallum Ltd.

Cartologix Corporation

Jack Sprat Design

## Description of the Watershed Planning Process

The first few Stakeholder meetings involved establishing a schedule and creating ground rules for the process. These ground rules are included in the Appendix to this Plan.

Stakeholders identified six theme areas and established working groups to address these rhemes:

- Trails, Open Space, Recreation and Cultural Heritage
- Habitat Protection and Restoration
- Water
- Social Development and Health
- Economic Development and Land Use
- Community Action, Education and Awareness

The Working Groups were made up of Stakeholder representatives as well as other individuals who had an interest in the theme area. The Working Groups assisted in the development of the State of the Watershed Report, reviewed technical background reports and identified the issues and actions which should be given priority attention in the Watershed Plan. Please refer to Chart 1 in the Appendix for a summary of steps in the Watershed planning process.

### Glossary of Terms

Certain words or phrases used in this Plan may be unfamiliar to some readers. Please refer to the definitions provided in the sidebars throughout the Plan. Glossary definitions borrowed from "Watershed Action Plan," Ontario Ministry of Natural Resources, in press, May 1998.

### General Definitions

***Stakeholders*** *– the individuals or groups that have a vested interest in a particular issue or area.*

***Stewardship*** *– the act of taking responsibility for the well-being of the natural nvironment.*

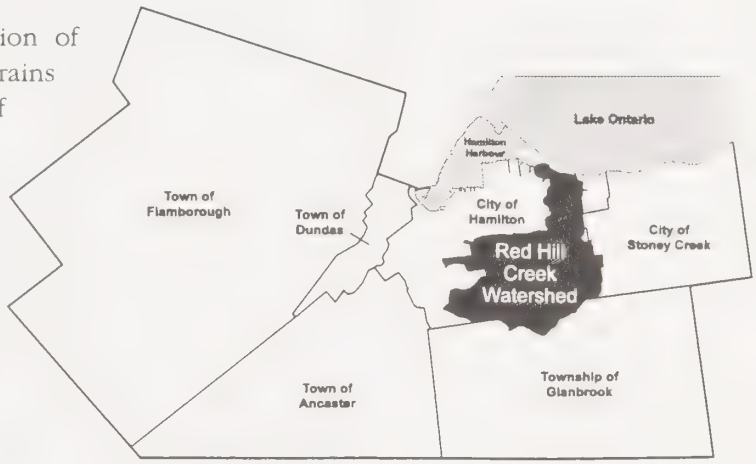
***Best Management Practices (BMP)*** *– practical solutions used to deal with soil and water conservation and health concerns. These may include techniques used to manage agricultural and urban runoff, or modify agricultural waste management.*

# The Red Hill Creek Watershed

III

## General Description of the Watershed

The Red Hill Creek Watershed is situated in the Region of Hamilton-Wentworth. It covers an area of 64 km² and drains into Hamilton Harbour. Its boundaries represent the area of land that drains into the Red Hill Creek and its tributaries, Hannon Creek, Davis Creek and Montgomery Creek. These boundaries include portions of three municipalities: the City of Hamilton (80 percent of the Watershed), the City of Stoney Creek (15 percent), and the Township of Glanbrook (5 percent). The boundaries include Windemere Basin but the exact drainage boundaries for this area have not been determined.

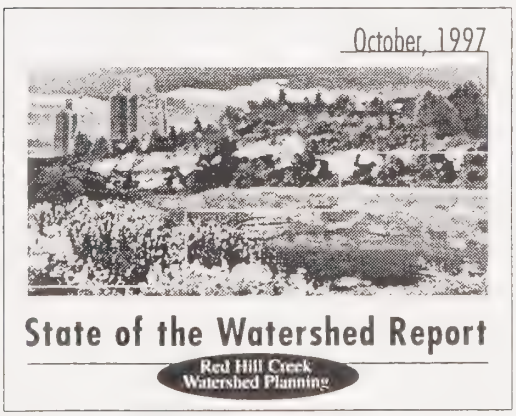



*Map 1 - Location of Red Hill Creek Watershed*

## The State of the Red Hill Creek Watershed

A "***State of the Watershed***" report has been prepared as part of this planning process. It presents what is known about air, land and water as well as important conclusions about conditions in the Watershed. The Report represents the combined knowledge and expertise of participants and a team of technical consultants. Reference should be made to this Report for detailed information about the Watershed.

The Red Hill Creek Watershed is one of the major watersheds feeding into Hamilton Harbour. Actions in the Watershed have implications for the Remedial Action Plan for the Harbour. The presence of the Niagara Escarpment, which has been designated a World Biosphere Reserve, gives the Watershed added significance on an international level.




Within the Red Hill Creek Watershed, there are seven distinct subwatersheds. At present, 60 percent of the Watershed has urban type drainage (i.e. rain is collected or conveyed in storm sewers, catchbasins, roadways or channelized watercourses). In about 45 percent of this area, storm water runoff is combined with "sanitary" sewage from residences and other buildings, which contributes to water quality problems in the Creek systems.

About 77 percent of the Watershed is currently developed. Of the remaining 23 percent, a further 12 percent is already in various stages of approval for development. The population of the Watershed is 138,760 (1996 census).

A watershed is generally described as the land drained by a river or creek and its tributaries. In urbanized parts of this Watershed the boundaries include the areas serviced by storm sewers that discharge to the Red Hill Creek. In less urbanized parts of the Watershed, the boundaries include lands where rain and snowmelt drain into the tributaries of the Creek.

The Watershed has a diverse economy including retail and service commercial, medical and professional services, residential development and construction, and industrial activities. Nearly half of the retail space in Hamilton is found within the Watershed's boundaries. The recreational and natural features of the Watershed represent opportunities for future economic activities.

In spite of the impacts of decades of human activity, the Watershed supports a diverse community. As many as 300 species of birds, mammals, butterflies, amphibians and reptiles live in or migrate through the area. Natural habitats within the Watershed include Carolinian floodplain forests, escarpment complex communities, wetlands, plantations, and successional meadows and thickets. The Red Hill Creek Valley contains nationally, provincially and regionally rare plant communities and supports important ecological functions including seasonal bird migrations, waterfowl nesting and staging and wildlife movement. The Regional Official Plan identifies four Environmentally Significant Areas based on their biophysical resources.

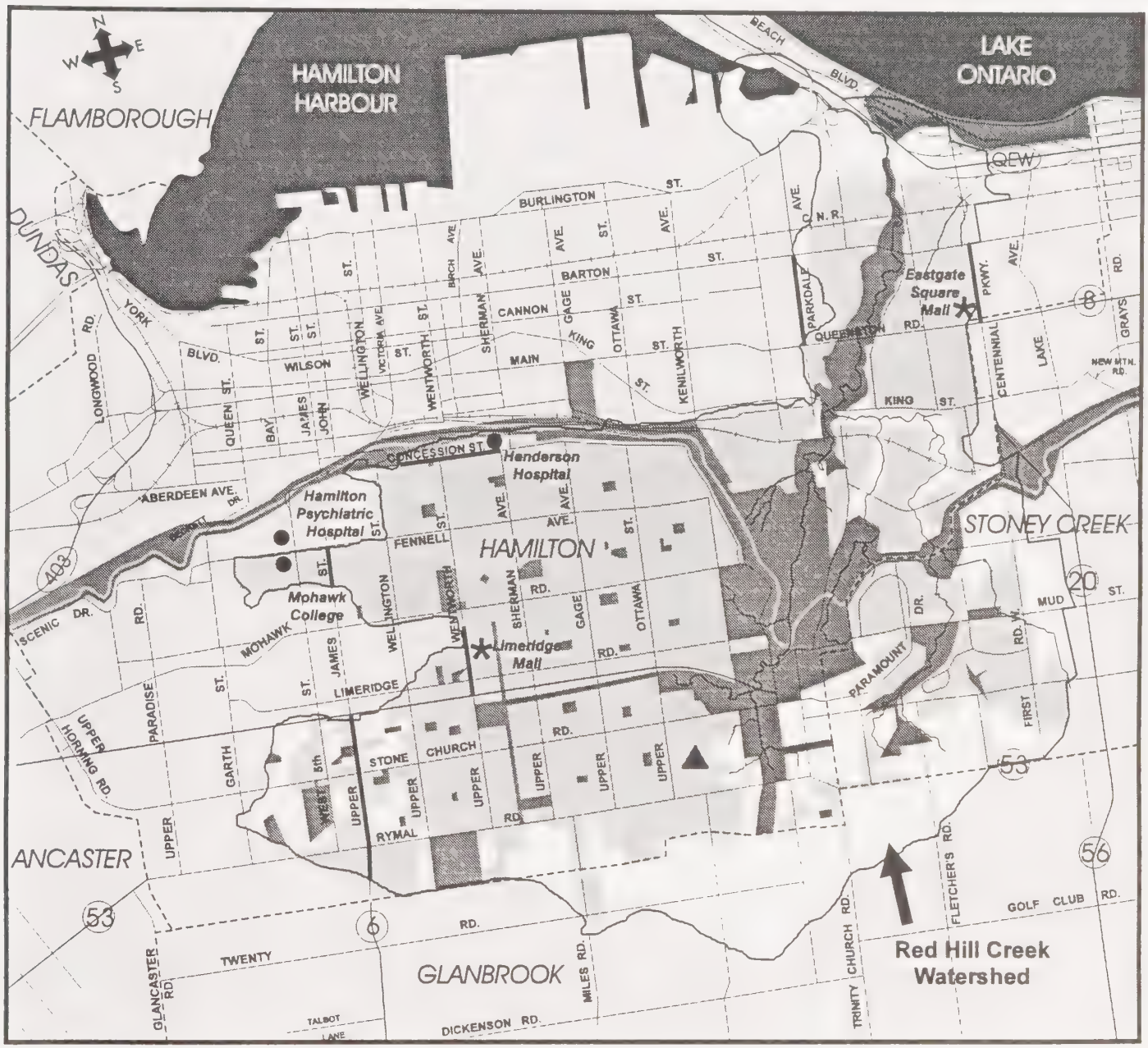
The water quality in Red Hill Creek is better than expected for an urban stream except during periods of high runoff when combined sewers results in contamination. As an urban stream its water quality can generally be described as poor due to the presence of contaminants such as metals, coliform bacteria and nutrients.

Soils in the watershed are composed mainly of clay till with silt deposits at the southwest watershed limits and clay deposits at the southeast watershed limits. On the Mountain, soils are composed of fine sand. Alluvial soils (fine-grained fertile soils consisting of mud, silt and sand deposited by flowing water) line the base of the Red Hill Creek Valley. Erodibility of the soils is low except where silt and fine sand deposits occur.

Due to urbanization, removal of vegetation along banks, structures and channelization, portions of some creeks in the Watershed are highly unstable, meaning there is evidence of high rates of erosion.

The "***State of the Watershed***" report confirms that human activities, over many decades, have seriously impacted natural features, processes and functions. Although the effects of extensive urbanization cannot be reversed there are still opportunities for positive changes to occur. In recent years, we have come to understand that the natural and human functions of watersheds are interconnected systems. Watershed planning helps guide human activities to ensure that future impacts are minimized and some of the impacts of the past are remedied.

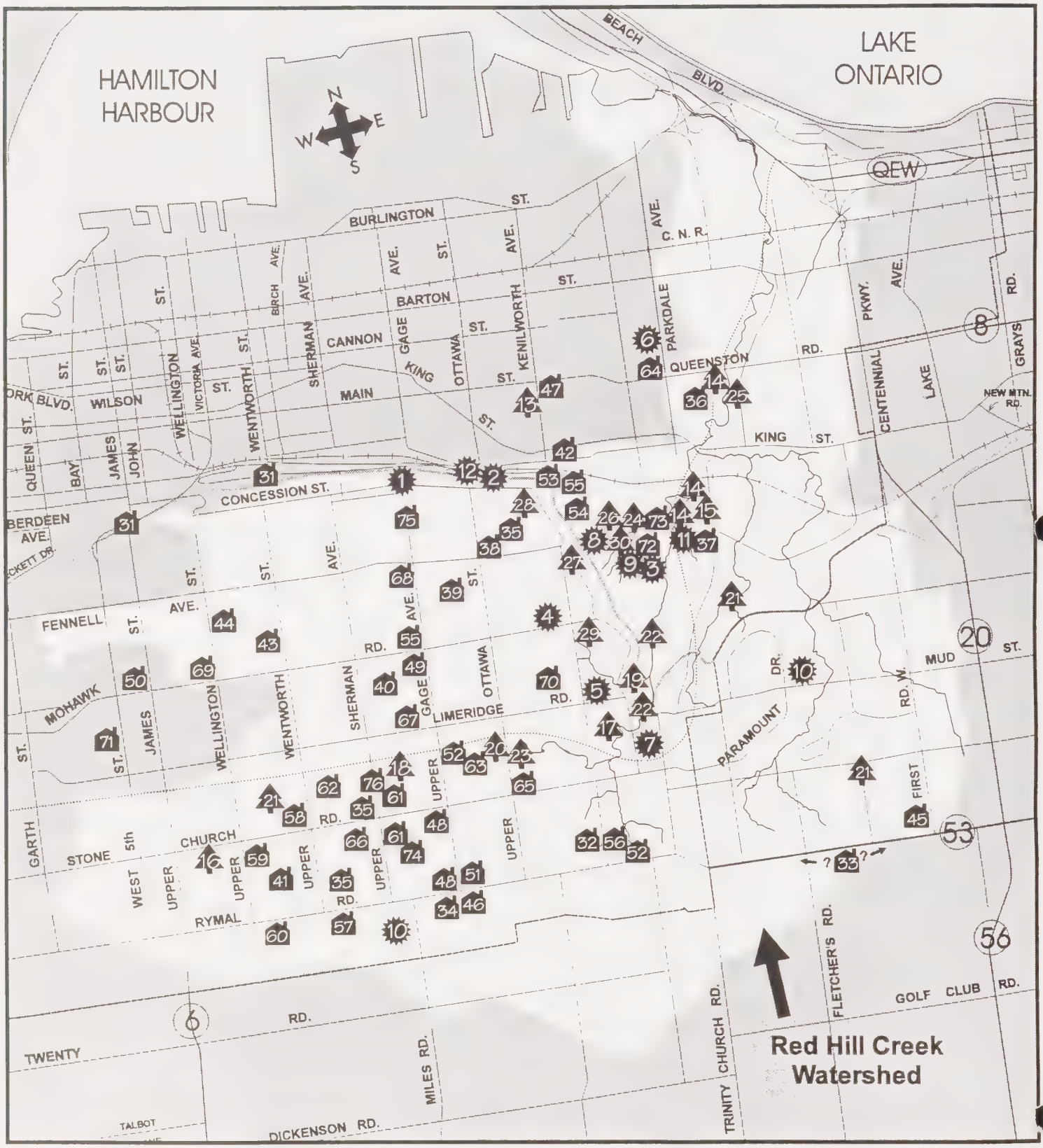
## Map 1: General Map of the Watershed




Legend

- Major Institution
- Major Commercial Centre
- Major Commercial Street
- Business Park
- Urbanized Area Within the Watershed
- Major Recreation / Public Open Spaces
- Niagara Escarpment

Map 1a: Our Home Watershed



## Historic Memories

1. *Mtn. Park Sunday Sing-Alongs*
2. *Toboggan hills*
3. *Wards Hill sledding*
4. *Drive-in (50 yrs. ago)*
5. *Drive-in (40 yrs. ago)*
6. *Wondergrove Dance Hall*
7. *Dance hall (50 yrs. ago)*
8. *Water tower with ice rinks*
9. *Christmas trees were burned here*
10. *Horseback riding*
11. *Fire Range Gun Club, where police used to practice*
12. *Old reservoir (swimming pool, park)*

## Historic Natural Features

13. *Tiger Smith Marsh with muskrats (50 yrs. ago)*
14. *Swimming hole*
15. *Harris' swimming pool*
16. *Walker Pool*
17. *Pond*
18. *Pond for Red Hill Creek*
19. *Falls*
20. *Devils Rapids*
21. *Caves*
22. *Natural gas*
23. *Chub fishing*
24. *Sucker fishing*
25. *Fising for pumpkin Sseed sunfish, rock bass, suckers (50 yrs. ago)*
26. *Grouse, pheasants (70's), deer, foxes (70's-present)*
27. *Foxes*
28. *Sherwood Forest*
29. *Forest*
30. *Marsh, bulrushes*

## Historic Cultural Built Features

31. *Incline Railway*
32. *Rymal Train Station*
33. *House with streetcar behind it*
34. *Four acre farm*
35. *Old barn/silo*
36. *Speers orchard*
37. *Orchard of peaches, apples, grapes*
38. *Felker farmhouse (40 yrs. ago)*
39. *Simmons farm*
40. *Comby farm 1920's*
41. *Comby farm 1970's*
42. *Farm sold out for school*
43. *Hunt farm*
44. *Farmhouse (50 yrs. ago)*
45. *CKOC radio tower*
46. *General store*
47. *Blacksmith shop, market gardening (50 yrs. ago)*
48. *Gas station*
49. *Car wash*
50. *Early stopping area for travellers*
51. *Hydro transformer*
52. *Old rock quarry*
53. *Brickyard with water tap (50 yrs. ago)*
54. *Clay storage for brickyards*
55. *Lumber yards*
56. *Hannon Family home*
57. *Horning home*
58. *Tin house*
59. *Young Family plot*
60. *Turner Family*
61. *House on hill*
62. *Old house (1960)*
63. *Round house*
64. *RCMP post in a log cabin*
65. *C.D. School (1940)*
66. *Barn School*
67. *Conley School*
68. *Old School*
69. *Two-room schoolhouse*
70. *Arms farm*
71. *Lime kilns*
72. *Hardball diamond*
73. *Softball diamond, where they have put sewer down*
74. *Baseball diamond*

Members of the Watershed Community marked locations of interest to them at an Open House held on October 20, 1997. Information has not been verified.

### Which Watershed Issues Should be Given Immediate Attention?

"Issues" are the questions or concerns about conditions in the Watershed. The Working Group members identified priority issues for each theme area. In the opinion of the Working Groups these are the issues that should receive immediate attention. Long Term Goals and recommended Action Areas have been developed for each of these issues and are discussed in the following pages.

The Working Groups also suggested specific action projects to address the priority issues. These projects are discussed in Section VI of this Plan and listed in a separate compendium of actions.

The issues and questions, which were not considered at this time, are listed in the Appendix. They should be examined when this Plan is reviewed or updated.

Theme

## Trails, Open Space, Recreation and Cultural Heritage

Relaxation and physical activities are essential elements of healthy living and good quality of life. The open space and recreational opportunities located within the Watershed allow the community to interact with their natural environment and offer a range of social, economic and environmental benefits. Wise management of the watershed's cultural heritage resources will ensure that valued, built features, representative landscapes and archaeological sites are conserved and protected.

Issue

### There Are Barriers to Creating a Fully Integrated Trail System

The Watershed contains a network of on and off-road walking and bicycle trails which connect to major trail systems like the Bruce and Lake Ontario Waterfront Trails. A number of additions could be made to improve this system. In specific areas, barriers to a continuous trail system such as transportation infrastructure (highways / bridges), private property, the steep slopes of the Escarpment and watercourses must be overcome.

| *Long Term Goal* | *Action Areas* |
|---|---|
| *An integrated trail system for all types of users that links natural and urban areas.* | 1. *Put updated plans in place for hiking and trail systems.*<br>2. *Design and construct new trails, staircases, bridges and other projects needed to cross barriers to trails including the Lincoln Alexander Parkway, the QEW, the Escarpment and creeks. (See Map 2)* |

**Linking Issues to Actions**

Agreeing on key concerns or issues was an important step in the Watershed planning process. The next challenge for the Working Groups was to decide what should be done about these issues. The shaded box in each theme area lists some long term goals and the general kinds of actions that must be taken in order to achieve these goals. In some cases the action areas are described in more detail on the charts and maps on the following pages.

Issue

## Important Natural, Recreational and Cultural Resources Are Under Stress

Over the past two centuries or so, agricultural and then urban development has negatively impacted both natural and cultural resources of the Watershed. Natural areas and features have been lost or degraded. Reminders of past human activities have been destroyed. Present day recreational use of parks and other open spaces is also causing damage to these areas.

| *Long Term Goal* | *Action Areas* |
|---|---|
| *Establish management systems which address the community's needs for recreation and open space opportunities without jeopardizing the natural and cultural heritage resources of the Watershed.* | 1. *Encourage users of trails and natural areas to enjoy their activities without causing damage to these areas or disturbing the enjoyment of others.*<br>2. *Design and construct facilities geared to the specific needs of user groups.*<br>3. *Close or redesign facilities which are being damaged as a result of overuse or inappropriate activities.*<br>4. *Ensure that the conservation of cultural heritage is addressed in land use decision making.*<br>5. *Rehabilitate and reuse abandoned heritage buildings and structures.* |

### Hidden Communities in the Watershed

At one time the Red Hill Creek Watershed consisted of farms in the midst of woodlots or other natural areas. Small settlements could be found along the major travel routes or close to the mill at Albion Falls. The former communities of Mount Albion, Albion Falls, Hannon , Ryckman's Corners, Mount Hamilton and Bartonville have been swallowed up by urban expansion. The locations of these settlements can still be traced through historic buildings, cemeteries, street names and the memories of older residents.

Issue

## Information Is Needed to Help Make Better Decisions

Information needed to help make decisions about recreation, open space and cultural heritage is currently not available for all parts of the Watershed. Unless there is adequate data for all of the watershed, we may continue to make decisions that result in further damage to natural and cultural resources.

| *Long Term Goal* | *Action Areas* |
|---|---|
| *Ensure that we have adequate information about recreation, open space and cultural heritage to help make better decisions.* | 1. *Collect or update information needed to manage trails, open space, recreation and cultural heritage resources.* |

Issue

## Greater Community Awareness Would Benefit the Watershed

In recent years the public has shown increasing interest in nature and history walks and other opportunities to learn about the Watershed's resources. Promotion of the Lake Ontario Waterfront Trail and the Niagara Escarpment has also drawn greater attention to these features. In spite of these efforts, many citizens are still unaware of the area's importance. As a result, individuals may be taking actions which disturb or damage the ecosystem.

| *Long Term Goals* | *Action Areas* |
|---|---|
| 1. *Develop community support for conservation of natural and cultural resources of the Watershed.* | 1. *Design and implement activities and materials to help the community learn more about the Watershed's natural, cultural and recreational resources.* |
| 2. *Conserve remaining cultural heritage features.* | 2. *Establish a permanent facility for learning about the Watershed through activity programs and the presentation of information and artifacts.* |

### The Lake Ontario Waterfront Trail

One of the recreational features of the Red Hill Creek Watershed is the Lake Ontario Waterfront Trail, which passes through the lower portion of the Watershed. The Waterfront Regeneration Trust is co-ordinating this ambitious project. The Trail incorporates on and off-road multi use routes.

The Waterfront Trail is currently 325 kilometres long stretching from Stoney Creek to Trenton. It links 22 cities, towns and villages. There are hundreds of natural areas, parks, marinas and yacht clubs, museums and historic places, fairs, art galleries and festivals along the route

Planning is underway to extend the Trail to include Niagara-on-the-Lake and Gananoque. The ultimate goal is to connect each end of the Waterfront Trail with New York State's Seaway Trail to provide a route right around Lake Ontario.

### Table 1
### Suggested Trails, Stairs or Pedestrian Bridges (as shown on Map 2)

1. *Pedestrian Crossing of the Q.E.W. between Hwy. 20 and Red Hill Creek*
2. *Pedestrian Link to Beach Boulevard at Woodward Avenue*
3. *Pedestrian/Cyclist Stairs at Fennel and Greenhill (Escarpment)*
4. *Pedestrian/Cyclist Stairs at Felkers Falls (Escarpment)*
5. *Access to the Valley Trails for the Adjacent Community at Greenhill*
6. *Access to the Valley Trails for Adjacent Community at Melvin/Barton*
7. *New Trail in the Lower Davis Creek Corridor*
8. *New Trail in the Lower Montgomery Creek Corridor*
9. *New Trail at Hydro Corridor between Mohawk Road and Municipal Boundary*
10. *New Trail at Hydro Corridor between Glover Road and Upper James Street*
11. *New Trail at Hydro Corridor between Glover Road and Barton Street*
12. *New Trail between Mount Albion Conservation Area and Stoney Creek*
13. *New Trail and Stairs from First Road to Greenhill Avenue (old Glover Mountain Road)*
14. *Pumping Station Trail from Woodward Plant to Ottawa Street*
15. *New Trail on Mount Albion Road from Glendale to Mud Street (if abandoned as a result of Red Hill Creek Expressway)*
16. *Link from Red Hill Trail across Mount Albion Neighbourhood to Rail Trail at Limeridge*
17. *Pedestrian Structure for Bruce Trail Hikers at the Proposed Expressway*
18. *Pedestrian Structure at the Expressway and Hydro Corridor between Upper Sherman and Upper Wentworth*
19. *Pedestrian Structure across the Proposed Expressway between Stoney Creek and Hamilton in the Vicinity of Mud Street*
20. *Pedestrian Structure across railway tracks linking Gage Park to the Escarpment Rail Trail*

## Map 2: Suggested Trails, Stairs or Pedestrian Bridges (Numbers refer to Table 1)


## Legend

### Existing Major Trails

- On Road Trails
- Off Road Trails

### Proposed Trails With Commitment

- On Road Trails
- Off Road Trails

- Pedestrian Linkages
- Pedestrian / Cyclist Stairs
- Access Point to Trail
- Trail Route Proposed in Watershed Plan

- A — Active Landfills
- C — Closed Landfills
- Niagara Escarpment
- Major Recreation / Public Open Spaces

Theme

# Habitat Protection and Restoration

Vegetation communities regulate microclimate, generate oxygen, retain moisture, prevent erosion, filter contaminants and provide habitat structure that sustain species biodiversity (aquatic and terrestrial) in the Watershed. Ensuring that terrestrial and aquatic habitats are healthy is key to supporting fish and wildlife populations, in addition to generating social and economic benefits to residents of the Watershed.

Issue

## Natural Habitat is Degraded, Threatened or Has Been Eliminated

Human activities have damaged or eliminated natural habitat on land and in water. Remaining natural habitats are scarce, consisting of isolated fragments, particularly on the Mountain. Many of these habitats are losing their ability to support fish and wildlife populations.

### *Long Term Goals*

1. *Natural habitat including forests, wetlands and streams are enhanced and restored. (See Map 3 and 3a)*
2. *Important natural habitat areas and linkages are identified and protected through the Regional and Local Municipal Official Plans.*
3. *Impacts, such as erosion and sedimentation, to natural habitats are avoided during construction.*

### *Action Areas*

1. *Protect natural habitat and promote restoration of damaged habitat on private and public lands through action projects. Particular attention should be given to forests and wetlands. Establish suitable policies and guidelines to be followed during development. (See Table 2)*
2. *Actively protect and improve natural habitats and their functions.*
3. *Re-establish lost habitat and species where possible.*
4. *Ensure erosion and sediment control plans are implemented properly and monitor their effectiveness at minimizing impacts.*

### The Red Hill Valley

The Red Hill Valley is the largest open space area in the Watershed extending from the Queen Elizabeth Way to the Niagara Escarpment. At 640 ha it is also the largest undeveloped area in Hamilton. The Valley contains important features including waterfalls, public parks, other public and private recreational facilities, sites of historic interest and a system of walking and bicycling trails.

The natural features of the Valley have resulted in its designation by the Region as an Environmentally Significant Area. The wetlands at the north end of the Valley are considered Provincially significant. Thanks to the joint efforts of the City of Hamilton, the Hamilton Region Conservation Authority, the Province of Ontario and community volunteers, portions of the Valley have been revitalized through the development of trails, information signage and tree planting projects.

## Education about Natural Habitat is Needed

Issue

Actions taken by the public, private interests and government agencies suggest that important ecological concepts, as well the issues and opportunities associated with natural habitat conservation and restoration are poorly understood.

### *Long Term Goals*

1. *The public supports and contributes to initiatives taken to protect and enhance habitat in the Watershed.*
2. *Private and public sector developments and projects incorporate ecosystem principles as development standards.*
3. *The Watershed community is recognized for its achievements in habitat protection and restoration.*

### *Action Areas*

1. *Monitor projects which impact on Environmentally Significant Areas in the Watershed. Issue regular reports on rate of habitat recovery across the Watershed, possibly as part of Sustainable Community Day events.*
2. *Undertake a Watershed Stewardship program which rewards achievements in habitat enhancement and restoration by individuals and communities.*
3. *Secure resources needed to support the Watershed Interpretive Centre at Elizabeth Bagshaw School in its efforts to promote Watershed awareness in the schools.*
4. *Establish a Watershed Council made up of community members with a co-ordinator.*
5. *Promote storm drain marking programs ( e.g., the Yellow Fish program) for students.*
6. *Erect warning signs and produce brochures to alert the community to water quality concerns.*
7. *Identify the Watershed boundaries with signs.*
8. *Link Watershed awareness activities to major events such as Environment or Wildlife Week or Earth Day.*

Habitat is the word used to describe the local environment that provides the food, water and shelter needed by plants and animals to survive.

Habitat Definitions

***Biodiversity*** *– the diversity of plant and animal species required for ecosystem health.*

***Buffer zone*** *– a planted or set aside area next to waterways, forests, or wetlands, intended to reduce negative impacts from nearby land use.*

***Ecosystem*** *– an interacting system of plants, animals, the land and the climate conditions that are linked by the flow of energy and the cycling of nutrients.*

## Knowledge about Natural Areas is Incomplete

Issue

The natural heritage database is incomplete and there is a limited understanding of terrestrial and aquatic resources (i.e. plant communities, fish and wildlife habitat) and functions in certain parts of the Watershed. Consequently, decisions are being made in the absence of important information.

### *Long Term Goal*

*To have on hand the information needed to understand and manage the natural habitat areas in the Watershed.*

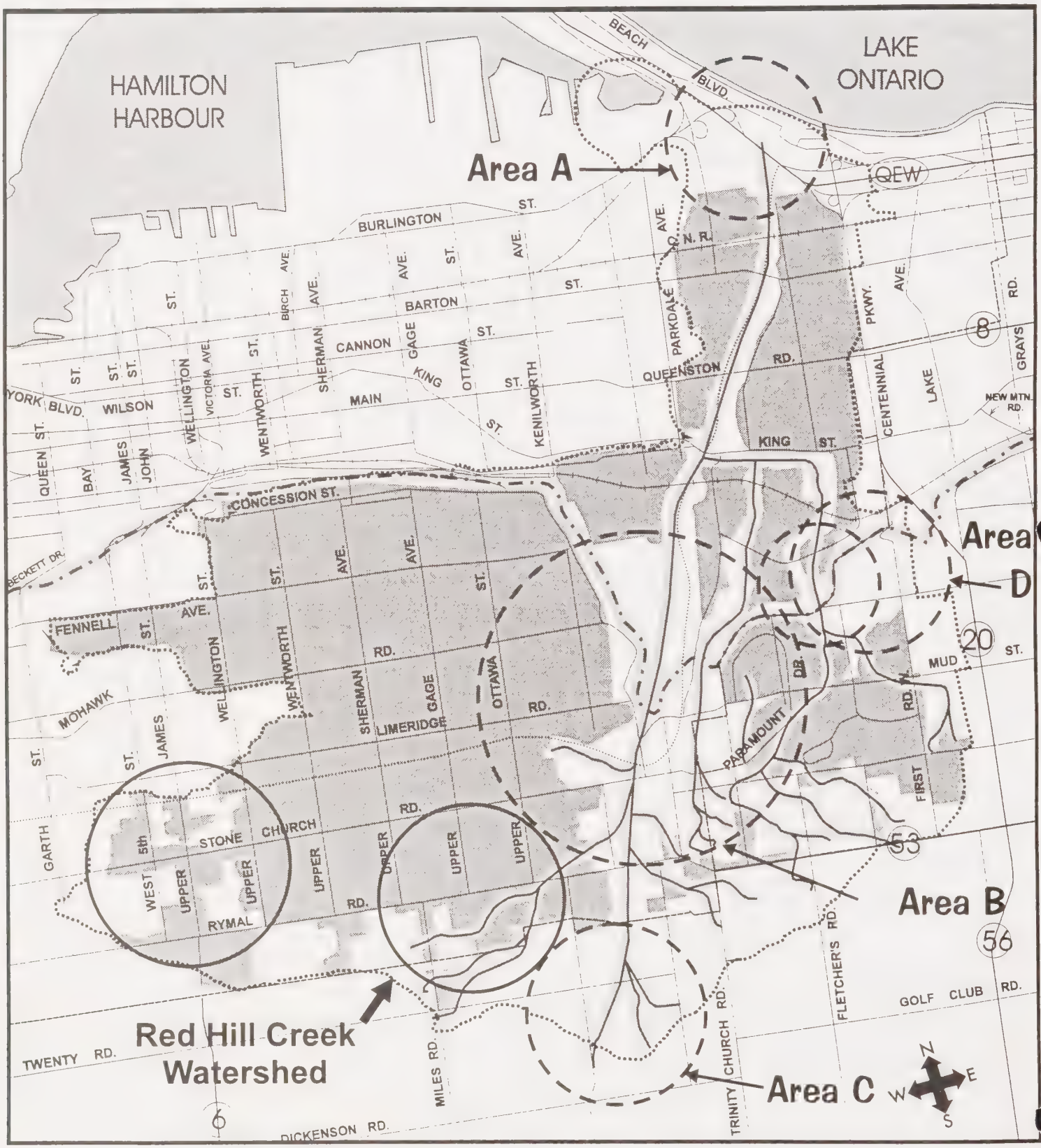
### *Action Areas*

1. *Collect the information needed for those natural habitat areas or issues which have not been fully studied.*
   *(See Map 3)*

***Environmentally Significant Area*** *- A regionally ecologically significant area which is given special policy consideration in the Hamilton-Wentworth Regional Official Plan.*

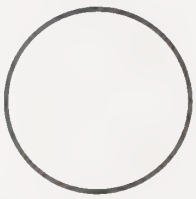
***Rehabilitation*** *– the process of restoring, recreating or repairing a damaged area to a healthy dynamic state*

Map 3: Opportunities to Conserve, Restore or Enhance Natural Areas



## Priority Habitat Restoration / Linkage / Management Areas (Areas A-D refer to Table 2)

- *Habitat and linkage restoration sites*
- *Further data collection, management plans & strategies required*
- *Project possibilities include:*
  - *clarification studies*
  - *site-specific restoration or management projects*



## Under-documented Areas

- *There are natural features which have not been documented*
- *Further data collection, management strategies may be required*
- *Project possibilities include:*
  - *clarification studies*
  - *environmental planning initiatives*

## Other Restoration and Enhancement Opportunities

- *General opportunities for protecting habitat and linkages by:*
  - *restoring stream channels and wetlands*
  - *enhancing vegetated areas along streams (priority)*
  - *managing human impacts along Escarpment and Valley rim areas*
  - *cleaning up or restoring degraded sites*
  - *creating neighbourhood awareness programs*
- *Site-specific Management Strategies needed for:*
  - *restoration of individual stream stretches*
  - *restoration projects in public spaces and new developments*

## Urban Habitat Management / General Public Education & Awareness

- *Streetscape, park naturalization and backyard habitat creation*
- *Enhancement of wooded areas a priority*
- *Project opportunities include:*
  - *park naturalization*
  - *pilot plantings of native streetscapes*

***Restoration*** *- The process of returning disturbed natural area to a condition that is as close as possible to its original state. Principles of Habitat Restoration*

***Succession*** *– the natural replacement of one plant community by another.*

***Terrestrial*** *– relating to the land. May be used to describe plants, animals and invertebrates.*

The following guiding principles should be considered when planning habitat restoration projects:

- Respect the existing or pre-existing natural and cultural character of an area
- Recognize the unique ecological character of each site
- Focus restoration efforts on significant natural features
- Establish priorities for restoration projects
- Create habitats that mimic natural processes and require little human maintenance
- To maintain biodiversity use native species grown from local plant sources
- Accommodate sensitively planned and managed human use in restored areas

From " Restoring Natural Habitats - A Manual for Habitat Restoration in the Greater Toronto Bioregion." Waterfront Regeneration Trust

## The Bruce Trail

In the early 1960's a Hamilton resident named Ray Lowes and fellow members of the Hamilton Naturalists Club undertook an ambitious project. They felt that the best way to encourage the conservation of the Niagara Escarpment would be to build a hiking trail along its length from Niagara to Tobermory. When volunteers began building the trail in 1963 they thought it might take five years or more to complete the project. Then they had another idea. Could the trail be completed in time to celebrate Canada's Centennial in 1967?

More than 1,000 volunteers from communities in Ontario and elsewhere worked year round and the last trail marker was painted on June 10, 1967. Today the BruceTrail is Canada's oldest and longest marked hiking trail. It is 782 kilometres long with over 290 kilometres of connecting side trails. The Bruce Trail Association was formed in 1963 and today 700 active volunteers from 9 associated clubs construct and maintain the trails, bridges and stairways along the route.

The Bruce Trail passes through the Red Hill Creek Watershed and in this area the Iroquoia Club maintains it. The Bruce Trail provides access to some of the important natural features in the Watershed and is a valuable recreational resource.

## Making Change in a Watershed

*The story of the Bruce Trail provides an excellent example of individuals and organizations working together for positive change. It is a valuable model for the projects and actions identified in this Watershed Plan. But how will these projects happen?*

*All successful projects involve four types of activities: Planning, resourcing, implementation and follow-up. Most of the action ideas in this Plan still have to go through these four stages.*

***Planning: What and How?***

*The Planning stage looks at a proposed project idea in detail. This stage involves everyone who has a role to play. It should also include discussions with anyone from the community who could be affected by the project in any way. Final research should be completed and the detailed steps written down so that everyone understands what will be happening.*

***Resourcing: Collecting the Tools***

*A project requires different kinds of tools. It is important to confirm that everything needed to complete the project is in place before work begins. Some questions to be asked at this stage are:*

- *Do we have enough money?*
- *Have arrangements been made for materials and equipment?*
- *Are the necessary workers or volunteers in place?*
- *Have we satisfied all government or legal requirements?*
- *Do we have permission of property owners, parents of youth volunteers or others whose support is needed for a successful project?*

***Implementation: Just Do It!***

*This is the part most people like the best. When the plans are completed and arrangements are in place it is time to do the work. This is always a good opportunity to involve the media. When the work is done it is time to celebrate and thank the people who made it happen.*

***Follow-Up: Was the Project a Success?***

*The final activity is often overlooked. Any type of project should be checked or evaluated after it is completed. In the case of tree planting for example, someone must ensure that new plants are thriving. If the project involves preparation of new guidelines records must be checked to ensure that they are being respected. Sometimes the follow-up activity is called monitoring and may go on for years. Monitoring helps us learn from experience so that similar projects can be improved in the future.*

*Section V discusses responsibility for taking projects through these four activity stages.*

## Map 3a: Potential Terrestrial and Aquatic Restoration Projects (Numbers refer to Table 2)


Legend

- Elimination of Barriers
- Aquatic Restoration and Species Re-introduction
- Habitat Enhancement
- Major Recreation / Public Open Spaces
- Escarpment

Table 2: Red Hill Creek Watershed: Potential Restoration & Linkage Sites (See Maps 3 and 3a)

| Location | Habitat Type | Map # & Activity Code | Restoration and Enhancement Opportunities |
|---|---|---|---|
| **Area A - Lower Valley and Lakeshore** | | | |
| Lake Ontario Shoreline | Beach Bar Communities | 1(RLMW) | Restore and enhance beach bar Communities |
| Van Wagner's Ponds & Marshes | Marsh | 2(RLMW) | Enhance existing marsh habitat |
| Red Hill Marsh | Marsh | 3(RLMW) | Enhance existing marsh habitat |
| Red Hill Creek Channel through Red Hill Marsh | Marsh | 4(RLMW) | Restore riparian Communities |
| Water Works Facilities | Landscaped Areas | 5(N) | Reforest and naturalize available areas |
| Brampton Street Landfill | Remnant Oak Savanna/ Successional Communities | 6(RLMN) | Restore and expand oak savanna habitat from existing remnant fragments. Reforest and Naturalize available open are |
| Brampton Street & Nash Street | Green Ash Woodlot | 7(RLM) | Restore and enhance forest habitat |
| Rennie Street Landfill and Public Works Depot | Successional Communities | 8(N) | Reforest and Naturalize available areas |
| Globe Park | Recreational Areas | 9(NM) | Reforest and naturalize available open are |
| Confederation Park | Landscaped Areas | 10(NM) | Reforest and naturalize available area |
| Confederation Park Canals and Ponds | Landscaped Areas Remnant Oak/Hickory stand | 11(NMW) | Naturalize and reforest Riparian areas Protect and enhance |
| **Area B (King's Forest-Mt. Albion-Escarpment Area)** | | | |
| Hydro Corridor adjacent to Mt. Albion Road | Marsh | 12(RLW) | Restore seepage conditions and marsh habitat |
| King's Forest GolfCourse | Recreational and Landscaped Areas | 13(NL) | Naturalize and reforest available open are |
| | Recreational and Landscaped Areas adjacent to the creek | 13(RNLW) | Naturalize and restore riparian habitats |
| | Links extending into King's Forest | 13(RL) | Relocate most southerly links and reforest openings |
| | Escarpment Talus | 13(RLW) | Restore seepage conditions |
| Matt Broman Park (Ski Hill) | Successional and Landscaped Areas | 14(RLM) | Restore Escarpment talus and cliff communities |
| Glendale Golf Course (Montgomery Creek) | Landscaped Areas | 15(RLMW) | Restore riparian habitat along Montgomery Creek |
| Buttermilk Creek (adjacent to Mountain Brow Road) | Landscaped Areas | 16(RLM) | Restore savanna communities through naturalization |
| King's Forest to Dartnall Road Interchange; Mountain Brow & Mud Street | Marsh, Riparian, successional and Escarpment brow areas | 17(NMLW) | Permit to naturalize; move or close roads in vicinity of falls |

**Activity codes:** L = Linkage Opportunities M = Management Required N = Naturalization
R = Restoration of Historic Communities W = Creation or Enhancement of Wetland Habitats

| Linkage Opportunities | Management Needs |
|---|---|
| Enhance linkage between Hamilton Beach Strip and the mouth of Stoney Creek | Vegetation Management including removal of exotic trees and shrubs<br>Restoration plantings of shoreline species |
| Restore link to Lakeshore and Redhill Creek | Management of water quality, water quantity and vegetation to restore habitat conditions for birds and herpitiles |
| Restore link to Van Wagner's Ponds and Marshes | Management of water quality, water quantity and vegetation to restore habitat conditions for birds, herpitiles and fish |
| Restore link to Van Wagner's Ponds and Marshes | Management of water quality, water quantity and vegetation to restore habitat conditions for birds, herpitiles and fish<br>Control of exotic species. |
| Connect savanna remnant fragments | Vegetation management to restore quality savanna species.<br>Control of exotic species. |
| Restore linkage to Redhill Valley and Marsh | Control of exotic species.<br>Control of exotic species |
| | Control of exotic species.<br>Control of pedestrian encroachment into natural areas |
| | Control of exotic species.<br>Control of pedestrian encroachment into natural areas.<br>Control of exotic species.<br>Control of pedestrian encroachment into natural areas. |
| Restore linkages between wetland and valley | Marsh soil seedbank preservation |
| Restore linkages between creek and escarpment | Control of exotic species.<br>Control of pedestrian encroachment into natural areas. |
| Restore and enhance creek valley linkage corridor | Control of exotic species.<br>Control of pedestrian encroachment into natural areas. |
| Restore forest interior conditions | Control of exotic species.<br>Control of pedestrian encroachment into natural areas. |
| Restore and enhance escarpment linkage | Protect seepage areas / Control of exotics |
| Enhance East-West escarpment link | Control of exotic species.<br>Control of pedestrian encroachment into natural areas. |
| Enhance Montgomery Creek linkage corridor by naturalizing channel and restoring riparian communities | Control of exotic species.<br>Control of pedestrian encroachment into natural areas.<br>Erosion control |
| Enhance and buffer East-West escarpment link | Control of exotic species.<br>Control of pedestrian encroachment into natural areas.<br>Manage for savanna species |
| Enhance linkage corridor by permitting naturalization of parklands; Restoration of Cliff Communities | Control of exotic species.<br>Control of pedestrian encroachment into natural areas. |

Table 2: cont'd

| Location | Habitat Type | Map # & Activity Code | Restoration and Enhancement Opportunities |
|---|---|---|---|
| **Area B (King's Forest-Mt. Albion-Escarpment Area) continued...** | | | |
| Mohawk Sports Park & Mountain Brow Rd. | Recreational uses, landscaped and Escarpment brow Areas | 18(NML) | Naturalize & reforest available open area move or close roads in vicinity of falls |
| Rymal Spur Rail Trail to Caledonia | Successional | 19(NL) | Permit sides of trail to naturalize |
| Mt. Albion Conservation Area | Successional Areas; Marsh; Plantation; Norway Maple Forest; Deciduous Forest | 20(NLW) | Permit area to naturalize. Riparian enhancement. |
| Hydro Corridor adjacent to Pritchard Road | Successional Areas | 21(NL) | Naturalize and reforest |
| Ottawa Street Landfill | Successional and Landscaped Areas | 22(NL) | Naturalize and reforest |
| Parks and Recreation Department Forestry Branch Ottawa Street Depot | Unvegetated or Successional Areas | 23(NL) | Naturalize and reforest available areas |
| Gravel Pits and Quarries adjacent to Dartnall Road & Rymal Road | Unvegetated or Successional Areas | 24(NLW) | Naturalize and reforest<br>Create wetland habitat |
| Agricultural Fields | Agricultural lands | 25(NL) | Naturalize and reforest |
| **Area C (Hannon Creek Headwaters)** | | | |
| Agricultural Fields | Agricultural lands | 25(NL) | Naturalize and reforest key linkage |
| Swales | Wet meadow and marsh | 26(NLW) | Naturalize channels |
| Gravel Pits and Quarries | Unvegetated or Successional Areas | 24(NLW) | Naturalize and reforest<br>Create wetland habitat |
| Rymal Rail Trail | Successional | 19(NL) | Permit naturalization / reforestation |
| Hydro and Utility Corridors | Successional | 21(NL) | Naturalize and reforest |
| **Area D (Felker's Falls and vicinity)** | | | |
| Felker's Falls Vicinity - Area between escarpment and residential backyards | Landscaped; Successional | 27(NL) | Naturalize and reforest |
| Davis Creek Valley | Successional; Landscaped | 28(NLW) | Naturalize and reforest<br>Create wetland habitat. |
| Taro Site | Unvegetated or Successional Areas | 29(NLW) | Naturalize and reforest<br>Create wetland habitat |
| Felker's Falls - Hwy 20 escarpment corridor | Agricultural Lands adjacent to Escarpment | 30(NL) | Naturalize and reforest |
| **Other** | | | |
| Oxbow - swamp south of TH&B | Shrub swamp | 31(MW) | Manipulate drainage to enhance wetland habitat |
| Upper James - Stone Church Rd. Area | Savanna remnants | 32(RM) | Restore and expand Oak Savanna habitat from existing remnant fragments. Reforest and Naturalize available open areas |

| Linkage Opportunities | Management Needs |
|---|---|
| Enhance linkage through rail trail; Restoration of Cliff Communities | Control of exotic species. |
| Enhance linkage through rail trail | Control of exotic species. |
| Enhance linkage corridor of Hannon Creek | Improve water quality in Hannon Creek.<br>Control of Norway Maple and other exotic species. |
| Enhance existing linear corridor | Control of exotics species. Implement a natural heritage strategy for maintaining hydro corridors |
| Link to Redhill Creek, Rymal Spur Rail Trail and Ottawa Street Parks & Recreation department depot | Control of exotic species |
| Link to adjacent creek, woodlot and Ottawa Street Landfill | Control of exotic species |
| Link naturalized areas to established corridors | Implementation of a natural heritage strategy for rehabilitation |
| Link to surface drainage features | Control of exotic species |
| Link to surface drainage features | Control of exotic species |
| Link to wooded habitats | Monitor water quality and erosion |
| Link to adjacent natural areas and linkage corridors | Control of exotic species |
| Link to wooded natural areas (i.e. Hannon Floodplain Forests; Nebo Road West Floodplain) | Control of exotic species |
| E-W and N-S links | Implement a natural heritage strategy for maintaining hydro corridors |
| Enhance Niagara Escarpment linkage corridor through naturalization | Develop and implement and Open Space Management Plan<br>Implement setbacks and fencing<br>Restrict access to major trails |
| Enhance Davis Creek linkage corridor from headwaters to Red Hill Creek | Control of exotic species<br>Monitoring |
| Link to adjacent natural areas and linkage corridors | Control of exotic species<br>Monitoring |
| Enhance Escarpment link at Hwy 20 crossing area | Develop and implement and Open Space Management Plan<br>Implement setbacks and fencing<br>Restrict access to major trails |
| Enhance habitat for migratory & breeding birds. | Cleanup of debris from adjacent residential lots. |
| Connect savanna remnant fragments | Vegetation management to restore quality savanna species.<br>Control of exotic species. |

Theme

# Water

The quality and quantity of water in Red Hill Creek and its tributaries to some extent determines the health of all water-dependent life within the Watershed, including fish, plant communities, wildlife and humans. Many known or potential contaminant sources are within one kilometre of the Red Hill Creek or its tributaries. Due to urbanization, removal of streambank vegetation, historical channelization (i.e. putting the Creek into a hard-surfaced ditch) and the resulting changes in stormflow, portions of the main creeks below the escarpment are highly unstable and degraded.

Issue

## Stormwater Runoff, Erosion and Sedimentation of the Creeks Are Causing Problems

The urbanization of 77 percent of the Watershed has made much of it impervious, preventing moisture from seeping into the ground. A large part of the historical stream courses have been buried by this urbanization. In addition, channelization, bridges, municipal infrastructure and other human actions have altered the natural course of the remaining streams. The result in the highly urban Red Hill Creek Watershed is that large amounts of water move very quickly through all the creeks after a heavy rainfall or snowmelt. Extreme stormwater flows pose the largest impediment to natural habitats. Erosion is a normal occurrence in all watercourses; however, along some sections of creek in the Red Hill Creek system, soil is being washed away at an abnormally high rate. This is resulting in damage to roads, bridges, culverts and natural habitat. Creek banks collapse and land is washed away in some areas. Repairs to damage caused by erosion can be expensive. The eroded sediment eventually washes downstream where much of it is deposited in Windermere Basin or carried into the Harbour. Sediment in Windermere Basin also originates from agricultural land in the south end of the Watershed (the headwaters) and other watersheds through treated effluent from the Woodward Sewage Treatment Plant at the outlet.

### *Long Term Goals*

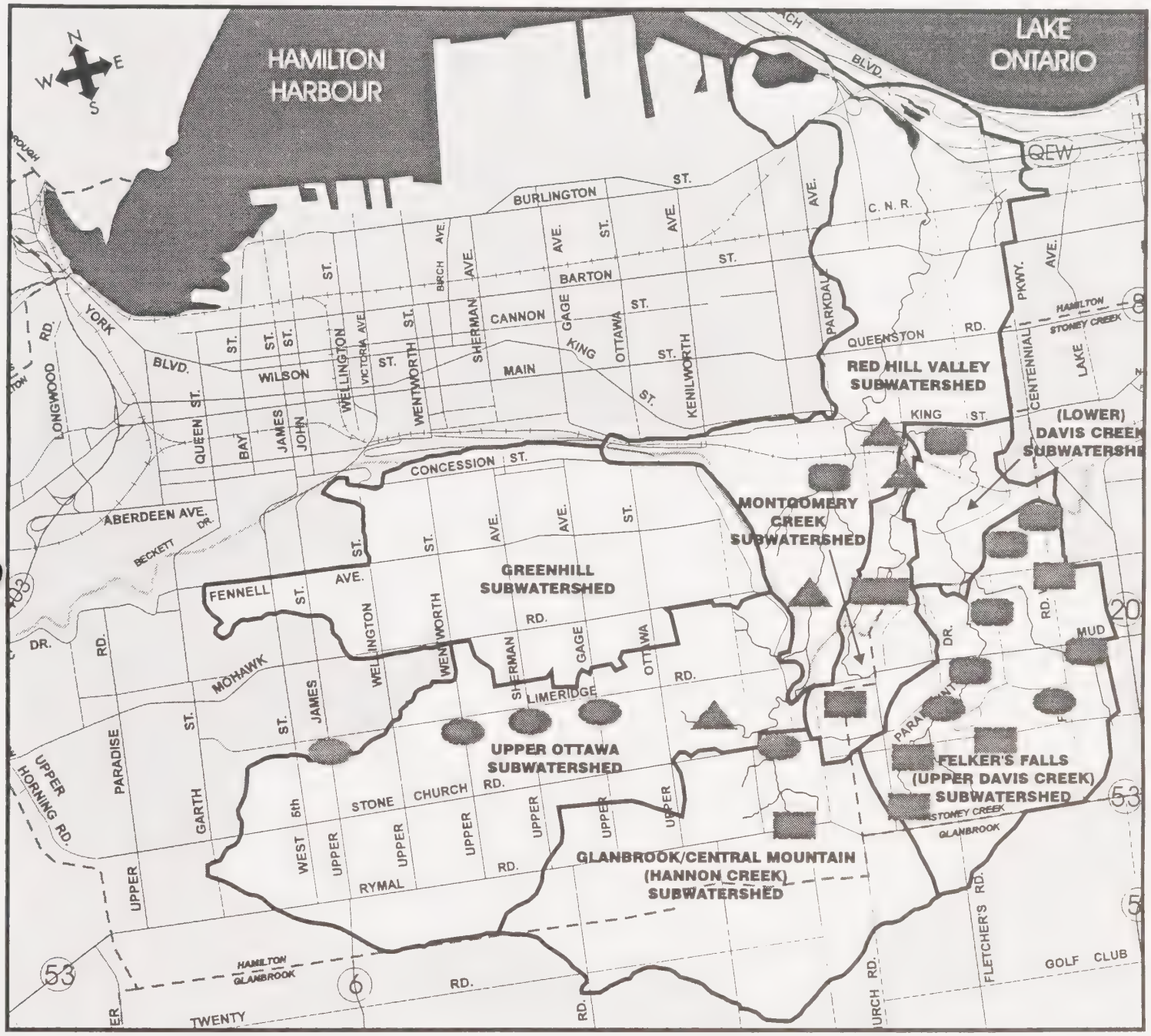
1. *Creeks that are stable i.e. normal levels of erosion and flooding found in natural stream systems.*
2. *Enough water in the creeks year round to support their essential functions.*
3. *The design of new development and redevelopment encourages rainfall to seep into the ground.*

### *Action Areas*

1. *Establish policies and programs to reduce the amount of water running off properties into the creeks in new and existing development areas.*
2. *Manage stormwater so that it does not damage creek systems.*
3. *Use natural design techniques to rehabilitate the creeks to prevent damage from erosion and flooding and ensure long term sustainability.*
4. *Educate the public about issues related to stormwater runoff, erosion and sedimentation.*

Refer to Map 4(a) - Opportunities to Manage Stormwater Quantity and Map 4(b) - Suggested Watercourse Improvements

## Map 4a : Opportunities to Manage Stormwater Quantity

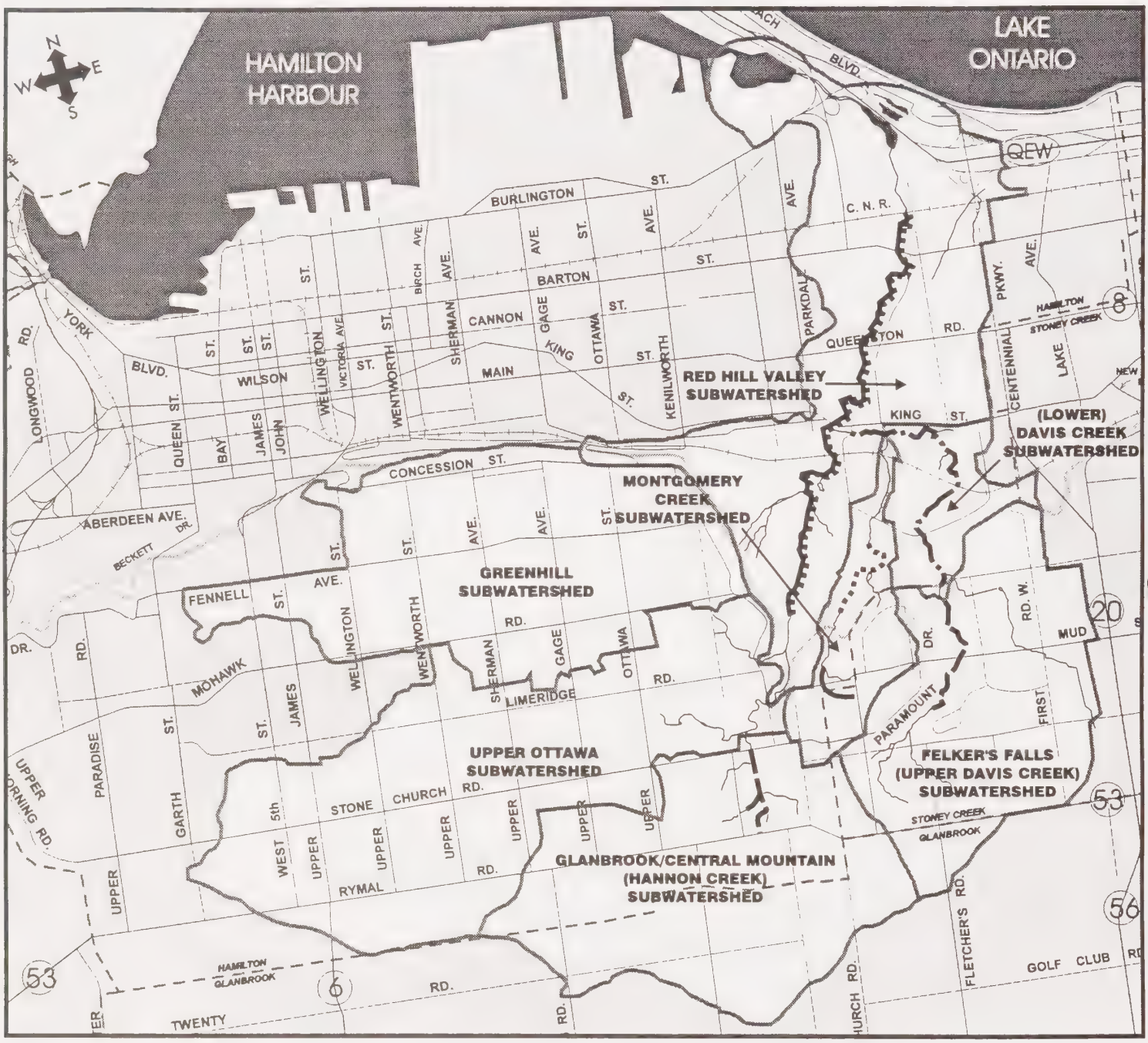



### Legend

**Stormwater Management Quantity Facility Location and Status**

- Built
- Recommended
- Previously Planned
- Not Recommended *(by Watershed Plan)*

Map 4b : Suggested Watercourse Improvements




## Legend

**Suggested Watercourse Improvements**

- Natural Channel Design
- Improve Riparian Vegetation
- Bioengineering
- Further Study / Monitoring

Issue

## Bacterial Levels in the Creeks Are High

There are high levels of bacteria in the Watershed's creeks at all times. High levels of bacteria make wading or swimming unhealthy. Unfortunately, children may not understand the danger and continue to play in the water. During and after a rainfall, bacteria originate through the combined sanitary and storm sewer systems. Where they come from at other times has not been determined. Possible sources include leaky septic tank systems in rural parts of the watershed, illegal hook-ups to the sewers or leaky sewer pipes.

### *Long Term Goal*

*A creek system that is safe for swimming. This means that the water meets Provincial Water Quality Guidelines for swimming where there are no more than 100 Escherichia coli colonies per mL, as of May 1994. (To monitor historical water quality trends, the following water quality guidelines may also be used: for faecal coliform, 100 faecal coliform colonies per mL, and for total coliform, 1,000 faecal coliform colonies per mL).*

### *Action Areas*

*To deal with bacteria coming from the storm sewer systems during storm events:*

1. *Construct combined sewer overflow storage systems to hold sewage and prevent frequent discharge of combined sewage into the creeks.*
2. *Identify and correct malfunctioning septic systems in the Watershed.*
3. *Construct wetlands, ponds and other facilities to store stormwater runoff from existing and future neighbourhoods.*
4. *Design new developments to encourage storage and infiltration of runoff, particularly in headwater areas.*
5. *Improve the functions of existing storm sewer facilities, such as the one at Greenhill Avenue.*
6. *Continue upgrading the Woodward Sewage Treatment Plant to ensure that the quality of effluent improves consistent with Regional Policy and the goals of the Hamilton Harbour Remedial Action Plan.*

*To deal with bacteria coming from storm sewers at other times:*

1. *Study the creeks and sewer system to determine where bacteria come from when it is not raining.*
2. *When other sources are identified, develop an action strategy to control the sources of bacterial contamination.*

Refer to Map 4(c) - Opportunities to Manage Stormwater Quality

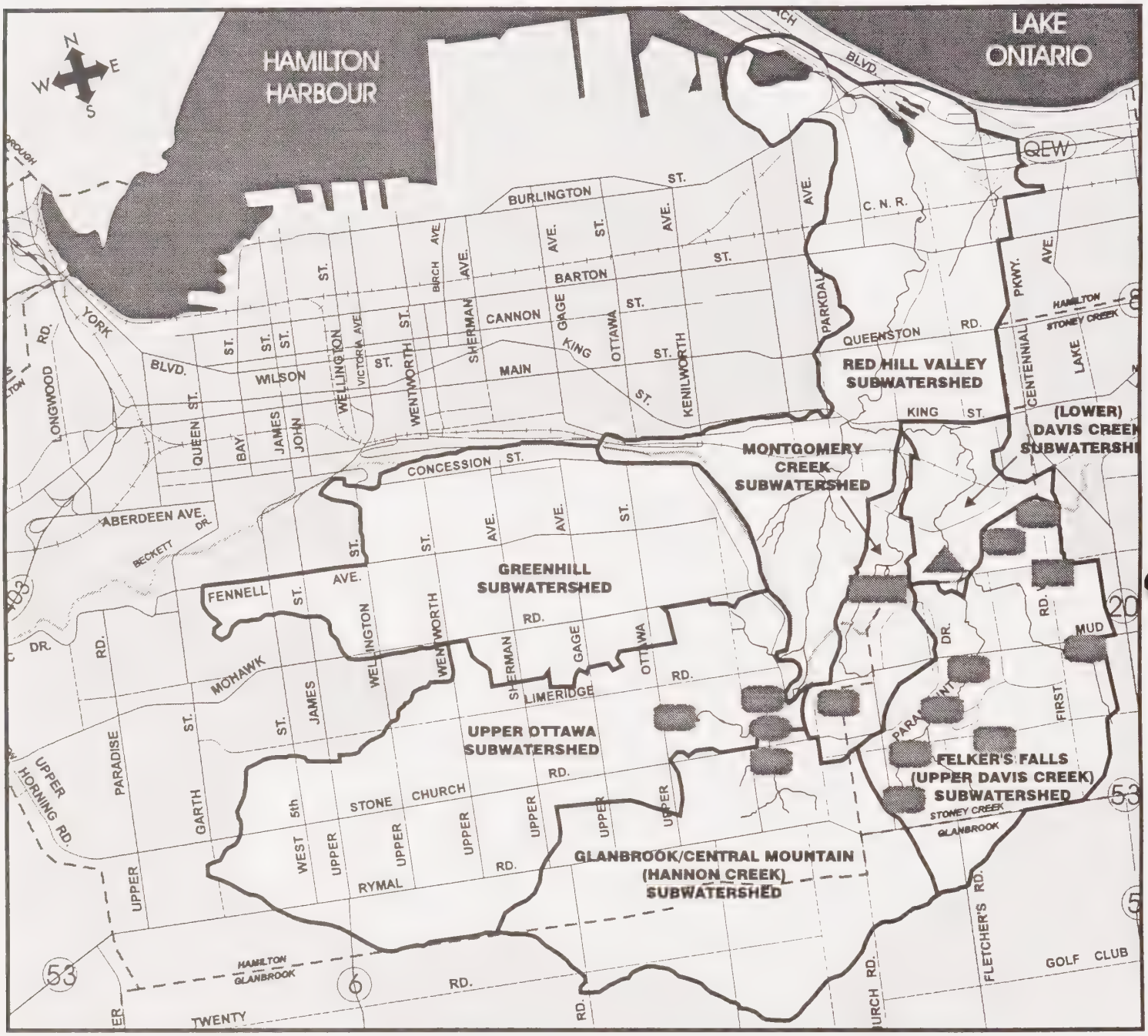
### Hamilton Harbour Remedial Action Plan

In 1986 representatives from over 40 agencies, organizations and businesses agreed to work together to improve conditions in Hamilton Harbour. Their efforts led to the publication of a plan of action in 1992. The Remedial Action Plan (RAP) for Hamilton Harbour is based on a high degree of community consensus about what needs to be done. The two Regions and four municipalities surrounding the Harbour support implementation of the RAP.

The Remedial Action Plan is an example of ecosystem-based watershed planning for the 494 km² area that drains into Hamilton Harbour. The Bay Area Restoration Council plays a key role in fostering efforts to restore and protect the environmental health of Hamilton Harbour and its watershed.

Red Hill Creek along with Spencer and Grindstone Creeks all flow into Hamilton Harbour. Improving conditions in the surrounding creeks through *cont'd on page 31* ➤

Map 4c: Opportunities to Manage Stormwater Quality




Legend

Stormwater Management Quality Facility Location and Status

- Built
- Previously Planned
- Recommended
- Not Recommended *(by Watershed Plan)*

Issue

## Better Water Quality Is Needed for Fish and Wildlife

The types of fish species found below the Escarpment are what would be expected in an urban creek. Above Albion Falls only one native fish (brook stickleback) species survives along with non-native goldfish. The reason(s) for the disappearance of four native species above the Falls since the mid-1980's is unknown. The causes and effects of the current water quality conditions on fish in the creeks are not completely understood.

### *Long Term Goal*

*A creek system which supports healthy populations of fish and water quality that satisfies Provincial Water Quality Guidelines for contaminants including ammonia and toxic metals.*

### *Action Areas*

1. *Actions taken to reduce bacteria levels in the creeks benefit fish and wildlife.*
2. *Undertake research to determine sources of contaminants in the water and their effects on fish and wildlife. The disappearance of fish species above Albion Falls and periodic sudden death of large numbers of fish below the Falls should also be investigated.*
3. *Follow provincial guidelines on the protection of fish habitat in urban environments. Establish and maintain a planted area 15 metres wide for permanent streams, along all creeks to prevent erosion, to filter runoff and to provide shelter, habitat and riparian corridors for fish and wildlife.*
4. *Re-introduce fish species which have disappeared above Albion Falls.*
5. *Encourage property owners to take everyday actions to improve water quality.*

### At Home in the Water

*Many are surprised to learn that the Red Hill Creek system is home to 23 different species of fish. Here are the common names of fish species found in the Watershed since 1967.*

*gizzard shad*
*rainbow trout*
*northern pike*
*northern redbelly dace*
*carp*
*common shiner*
*fathead minnow*
*longnose dace*
*pearl dace*
*white sucker*
*threespine stickleback*
*pumpkinseed*
*Chinook salmon*
*brown trout*
*goldfish*
*lake chub*
*emerald shiner*
*spottail shiner*
*blacknose dace*
*creek chub*
*brown bullhead*
*brook stickleback*
*green sunfish*

*cont'd from page 31* ➤ implementation of watershed and sub-watershed plans will eventually help improve the Harbour as well.

This Watershed Plan addresses the following matters of particular concern identified in the Hamilton Harbour Remedial Action Plan:

- Controlling erosion
- Reducing the amount of bacteria and other contaminants carried into the Harbour
- Increasing vegetation along creeks and shorelines
- Conserving and restoring natural habitat areas to support fish and wildlife species
- Improving public access to the Harbour from the Red Hill Creek Watershed
- Encouraging individual citizens to take action to conserve water, reduce runoff from their property and prevent contaminants from entering creeks and sewers
- Supporting land uses that sustain environmental quality
- Encouraging environmental stewardship on parks and other large tracts of public and private lands

Issue

## Groundwater Quality Must Be Protected

Rain and melting snow seep into the ground where it moves below the surface. On the Mountain, most of this water flows into the creeks while some discharges along the face of the escarpment or is stored deep in the bedrock. This groundwater has the potential to be contaminated as the result of accidental spills from industry, transportation, agricultural applications on fields or through other means. This is a particular concern on the Mountain where most groundwater flows to the creeks. Although no major sources of groundwater contamination have been identified, it is a potential issue.

| *Long Term Goal* | *Action Areas* |
|---|---|
| *Better management of land to prevent contamination of groundwater.* | 1. *Identify locations where contaminants are likely to be moving into the groundwater system. Investigate these sites and take whatever steps are needed to prevent contamination.*<br>2. *Use established procedures to prevent groundwater contamination through better management of stormwater runoff and of contaminant spills in established and developing parts of the watershed.*<br>3. *Develop guidelines for gathering information about groundwater to be used in the review of new development proposals.* |

Refer to Map 4(d) - Opportunities for Research, Community Awareness and Stewardship Projects

### Water Definitions

***Aquatic*** *– relating to water. May be used to describe plants, animals and other life in streams, rivers and lakes.*

***Base flow*** *– the year-round discharge of groundwater into a stream.*

***Bedrock*** *– the solid rock underlying soils and the loose surface mantle of the earth.*

***Fluvial*** *– relating to rivers and streams.*

***Groundwater*** *– water that has infiltrated below the earth's surface. Like surface water, it moves in response to gravity, but its movement may be restricted by impermeable rock or clay layers.*

***Headwaters*** *– areas of a watershed where water courses originate.*

***Riparian*** *– 'streamside' or referring to stream banks.*

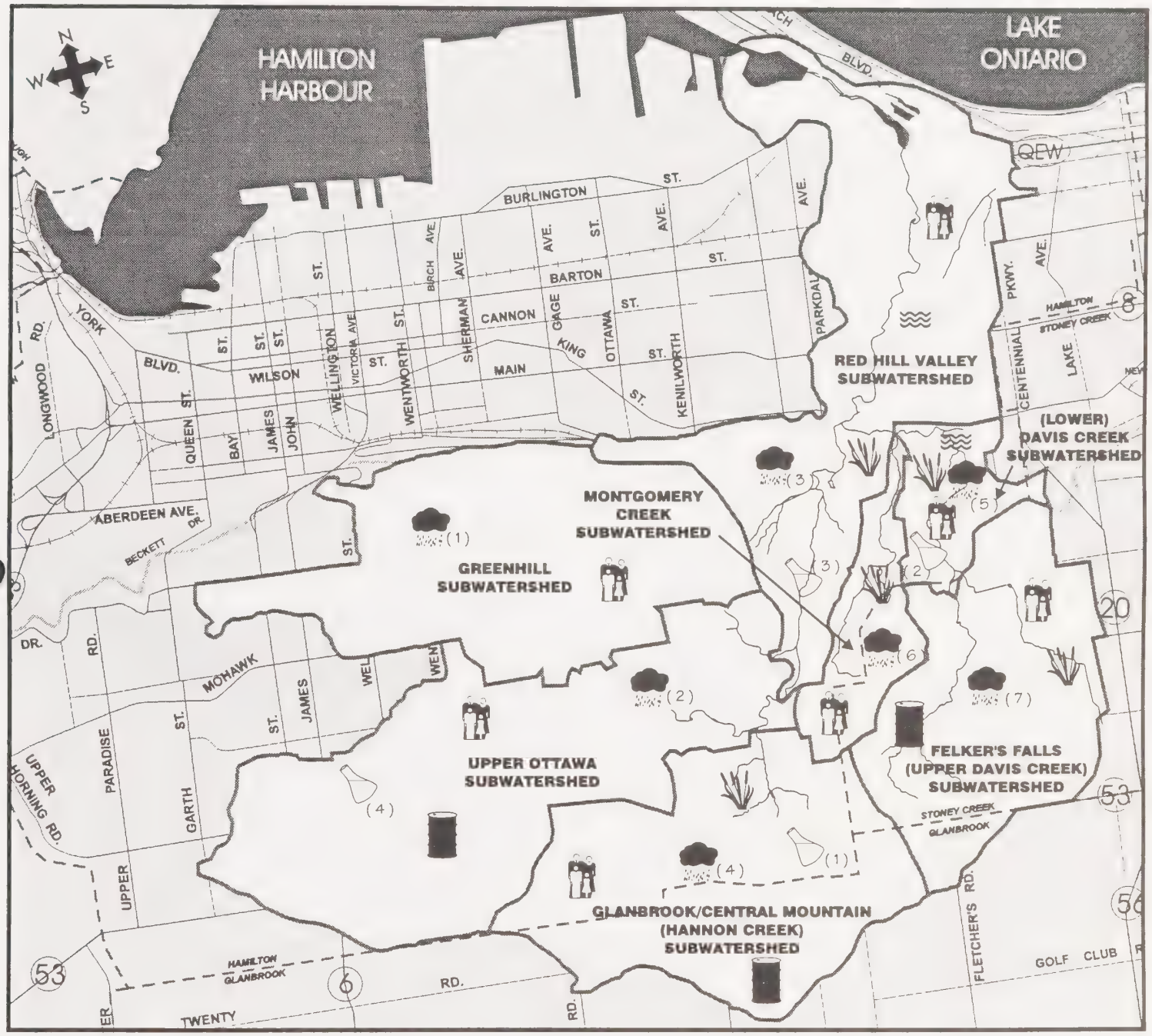
***Sediment*** *– small particles of rock, sand and organic matter that is carried in water or settles to the bottom of a watercourse.*

***Stormwater management (SWM)*** *– the management and control of water flowing from the land to river or streams during rain storms.*

***Urban runoff*** *– rain water and snowmelt, usually containing litter, organic and bacterial wastes, draining from city streets and gutters to storm sewers, ditches and local streams*

***Wetlands*** *– low lying, wet areas supporting marshes, bogs, swamps or fen plant communities where soil is saturated for most months of the year.*

Map 4d: Opportunities for Research, Community Awarness & Stewardship Projects




## Legend

Note: Figures in ( ) represent Priority Ranking (i.e. 1 is highest)

## Action Opportunities by Subwatershed

- Roof Leader Disconnection/Rain Barrel Program (Priority Ranking)
- Bacterial Source Identification Investigation (Priority Ranking)
- Community Awareness and Action
- Natural Channel Investigation
- Riparian Vegetation Enhancement Program
- Investigation of Contaminant Sources and Spill Management for Groundwater Protection

Theme

# Social Development and Health

Potential concerns and issues associated with this theme cover a wide range of topics. Based on Working Group discussions, the areas of Air Quality, Health and Safety Concerns and Social Values Research were identified and selected.

Issue

## What Can Be Done About Air Quality?

There are two points to consider with regard to air quality. First, information about air quality is collected by a network of monitoring stations across the City of Hamilton. This makes it difficult to study the state of the air in the Watershed separately from the surrounding area. Air pollutants generated within the Watershed travel beyond its boundaries. Some pollutants drift over the Watershed from other places. Actions to address air quality problems must consider these patterns of air movement. While some things can be done at the Watershed level, significant improvements in the state of the air will result from efforts taken on a wider scale.

Second, air quality data is not available for the entire Watershed. As noted above, monitoring stations are located in the City of Hamilton. There are no stations in Stoney Creek or Glanbrook.

### Long Term Goal

*The Watershed community takes actions to reduce air quality problems which affect portions or all of the Watershed.*

### Action Areas

1. *In October 1997 the report of the Hamilton Air Quality Initiative (HAQI) was released to the public. HAQI was a joint project involving a variety of agencies, organizations and individuals in the Hamilton-Wentworth Community who share an interest in air quality. Their findings and 25 recommendations for action affect the entire Hamilton-Wentworth Region including the Red Hill Creek Watershed. Key recommendations of the HAQI report were focussed on reducing levels of two major pollutants, which are a priority concern in this Region, inhalable particles and sulphates. Implementation of the recommendations of the HAQI Report will have benefits for the entire Watershed. (See key recommendations of the HAQI report in sidebar.)*
2. *Enhance the present network of air monitoring stations within the Watershed. Consider involving the community in monitoring local conditions.*

### Key recommendations of the Report of the Hamilton Air Quality Initiative

- Promote public awareness to help community understand how they can contribute
- Implement code of practice/guidelines/best available control technology for industrial sources, with emphasis on inhalable particulates and sulphates
- Control fugitive dusts
- Implement Federal recommendations for reducing emissions from iron and steel sector
- Establish standards for vehicle emissions and vehicle emission testing
- Establish an anti-idling by-law
- Reduce the number of single-occupancy automobile trips
- Enact commercial vehicle maintenance standards
- Achieve more efficient commercial vehicle flow
- Reduce transboundary pollution
- Develop and Implement energy conservation measures
- Research to identify and evaluate information about health and environmental effects, sources of pollutants and projections of future trends in emissions

Issue

## Meteorological Effects of Red Hill Valley

Physical features of the land such as the presence of Lake Ontario and the Niagara Escarpment can influence the lower atmosphere which in turn affects weather and air quality. The effect of the Red Hill Valley on local conditions and air quality has not been studied and therefore, is not understood.

| *Long Term Goal* | *Action Areas* |
|---|---|
| *The Red Hill Valley's effects on movement and condition of air is documented and understood.* | 1. *Study the effects of the Valley on air movement and air quality.* |

Issue

## Health and Safety Concerns Need Attention

The community must be informed about areas of the Watershed where conditions might pose risks for certain activities. For example, creek water, particularly around sewer outfalls, can be high in bacteria. Trespassing on informal trails across closed landfill sites is also inadvisable. Studies have also shown that poor air quality, notably the presence of inhalable particles and ozone, have effects on health.

| *Long Term Goal* | *Action Areas* |
|---|---|
| *People using the Watershed are aware of areas within the Watershed where certain activities should be restricted.* | 1. *Raise the community's level of awareness about health and safety concerns in the Watershed.*<br>2. *Take action to reduce or eliminate undesirable conditions or situations, particularly those related to storm sewer outfalls and closed landfill sites.* |

Issue

## Information About Community Attitudes is Lacking

There has been limited research conducted in the Watershed to determine how community members feel about its features and resources. Attitudes and concerns about natural areas, open space and recreation, environmental or social matters and economic issues would be valuable to decision makers and other users. Important decisions about land use and recreation are being made on a regular basis in the absence of this type of information.

| *Long Term Goal* | *Action Areas* |
|---|---|
| *Improved understanding of community values to guide decision-makers* | 1. *Undertake research to develop and regularly update information about the Watershed communityís values, needs and perceptions.* |

Theme

# Economic Development and Land Use

About 77 percent of the watershed is urbanized and commitments are made for further land use and infrastructure development within the watershed. Therefore, opportunities for achieving watershed-wide goals such as policies and direction for ecological health and carrying capacity, protection of valley systems and green space, etc. are constrained. Nevertheless, opportunities still exist for identifying, and implementing programs for the healthy management of the Watershed through economic development and land use mechanisms.

Issue

## What Opportunities Exist to Restore and Remediate the Negative Impacts of Past Development?

Past agricultural and urban development responded to the needs and environmental understanding of the times. These past activities have resulted in damage to natural habitat and important ecological and hydrological processes. In some cases, the negative impacts are not well documented or understood. Opportunities to enhance our understanding of impacts and restore degraded features and processes through development and redevelopment initiatives should be pursued.

### *Long Term Goals*

1. *Recovery of areas of natural habitat lost to agricultural and urban development in the past.*
2. *The remediation and re-use of all "brownfield" commercial and industrial sites identified in the Watershed.*

### *Action Areas*

1. *Undertake pilot remediation and adaptive re-use of selected sites.*
2. *Include rehabilitated natural areas as a land use category for monitoring purposes.*

Issue

## What Clear Direction Is Needed to Ensure that Development Meets Watershed and Sustainability Objectives?

Clear guidance is needed to minimize the impact of current or future development and redevelopment on the natural and cultural resources of the Watershed. Certainty about the "rules of the game" is important to regulators, implementers and the community at large. Watershed goals and actions must be clearly addressed through policies, regulations, guidelines and stewardship or best management practices.

| Long Term Goals | Action Areas |
|---|---|
| 1. *Political decision-makers, municipal planning staff and members of the development and building sector are aware of their role in promoting the goals of the Watershed Plan.* | 1. *Establish policy, guidelines and incentive programs to encourage mixed use and higher density development.* |
| 2. *An improved inter-agency and inter-municipal management system for land use and infrastructure planning is in place.* | 2. *Recognize watershed-planning goals in planning policy and guidelines.* |
| 3. *Measures to enhance infiltration on-site are standard procedure.* | 3. *Require subwatershed planning for stormwater management and provide clear requirements for their preparation.* |
| 4. *Existing Best Management Practices for dust, erosion control, grading, sewage connections, etc. are enforced.* | 4. *Establish mechanism for land banking to compensate for loss of natural areas.* |
| 5. *Positive contributions by the community and the development industry are recognized.* | 5. *Establish one responsible body for stormwater management and other development related engineering decisions.* |
| | 6. *Implement program to recognize efforts to promote watershed goals through development and construction activities.* |

Issue

## Could an Economic Development Strategy for the Watershed Be Developed?

An economic development strategy is needed for the Watershed. It should take into consideration Vision 2020 objectives and identify initiatives that support the community, build on community skills and recognize the environmental constraints and opportunities provided by the unique characteristics of the Watershed.

| Long Term Goals | Action Areas |
|---|---|
| 1. *Recognition by the community of the strategic importance of the Watershed in terms of its economic, environmental and social features.* | 1. *Develop an ecotourism strategy based on the Watershed's natural and cultural amenities.* |
| 2. *A healthy watershed economy supporting diverse and sustainable enterprises.* | 2. *Establish new Business Improvement Areas supporting neighbourhood retail activities.* |

# V From Plan to Action

## Who Is Responsible for Taking Action?

Participants came up with over 100 projects intended to improve conditions in the Red Hill Creek Watershed. They include actions such as restoring habitat or building trails, education and awareness initiatives, research projects and suggestions for policies or guidelines. Responsibility for implementing these projects lies with a variety of organizations. No single government, community group or private interest has sole responsibility for the Plan.

The Community Action, Education and Awareness Working Group initiated a listing of all the 100+ projects. This document provides a complete catalogue of actions with available details about responsible parties, cost and timing. Stakeholders were then asked to indicate whether they had a role to play in one or more of the projects. This information is included in the "Compendium of Actions" for the Watershed Plan which is a separate document. Over time, projects will be completed and removed from the Compendium while others will be added.

(Details of the Co-ordinating Role are under negotiation. Section to be completed.)

## Important Points to Remember about Implementation

The Community Action, Education and Awareness Working Group suggested that the following principles be kept in mind during implementation of the Watershed Plan.

1. Implementation of the Plan should build on the existing network of organizations in the Hamilton-Wentworth community to avoid further splintering of energy and resources.

2. Wherever possible, existing educational literature and materials should be used. Where new brochures or other resources are required they should be developed in collaboration with other similar projects or programs to minimize duplication of effort.

## How Will Progress be Measured?

The Watershed Plan contains a number of long term goals for each theme area. The actions discussed above will be undertaken to help achieve these goals. But how will we know if the actions are being carried out and whether they are having the

## How Will Progress be Measured?

The Watershed Plan contains a number of long term goals for each theme area. The actions discussed above will be undertaken to help achieve these goals. But how will we know if the actions are being carried out and whether they are having the desired effect? This is where "monitoring" comes in.

Monitoring is an important part of implementing any sort of plan, including watershed plans. Two types of monitoring will be needed for the Red Hill Creek Watershed Plan:

**Monitoring Actions:**
Regular reporting on the items contained in the Compendium of Actions will be required. Are Stakeholders carrying out the projects for which they assumed a "Lead" or "Partner" role? If not, what can be done to encourage or support these actions? By reviewing the status of actions regularly participants might come up with new ways to achieve the goals of the Watershed Plan.

**Monitoring the Goals of the Watershed Plan:**
Each theme area in this Plan contains Long Term Goals for the Watershed. In order to achieve these goals the current conditions described in the State of the Watershed Report must be improved. Monitoring changes in these Watershed conditions will require the selection of some "indicators". Indicators are conditions or states that can be measured or observed over time to determine whether changes are occurring. Indicators should be identified for each Theme area of the Plan.

Participants have suggested some candidate indicators. These ideas have been incorporated into a model for a Watershed Report Card shown on the following page. The creation and regular publication of a Watershed Report Card is one of the items included in the Compendium of Actions. Additional research will be needed to establish specific targets appropriate to the Red Hill Watershed.

### Watersheds within Watersheds

Watersheds fit together in ever larger systems like the twigs and branches of a tree. The Red Hill Creek Watershed encompasses several smaller sub-watersheds. It is itself a sub-watershed of the larger Hamilton Harbour Watershed. The Hamilton Harbour Watershed is part of the Lake Ontario Watershed, and so on. Actions taken in one watershed have impacts on the next.

Watershed planning is underway for the three major systems in the Hamilton Harbour Watershed: Grindstone Creek, Spencer Creek and Red Hill Creek. While all have unique characteristics and issues, there are opportunities for enhancing each watershed that are common to all three. Partnerships for restoration planning, monitoring, stewardship and education are being explored through the Watershed Planning Network, an initiative of the Hamilton Harbor Remedial Action Plan.

## A Model Report Card for the Watershed

| Grade A | B | C | D | E | Achievement Areas |
|---|---|---|---|---|---|
| | | | | | **THEME: Trails, Open Space, Recreation and Cultural Heritage** |
| | | | | | • an increase in the total length of appropriately designed on and off road trails |
| | | | | | • increase in % Watershed residents pursuing recreational activities within the Watershed |
| | | | | | **THEME: Habitat Protection and Restoration** |
| | | | | | • an increase in the total area of riparian habitat (natural habitat along creeks) |
| | | | | | • maintaining or increasing the total area of wetlands |
| | | | | | • maintaining or increasing the total area of forests and meadows and the linkages between them |
| | | | | | • maintaining or increasing the number of butterfly, mammal, reptile and amphibian species |
| | | | | | • maintaining or increasing the number of species of breeding (resident) and migratory (just passing through) bird species |
| | | | | | • a decrease in the number of physical barriers to fish migration |
| | | | | | **THEME: Water** |
| | | | | | • flood events follow natural patterns |
| | | | | | • maintaining or increasing the flow of water during dry periods |
| | | | | | • improved water quality (a decrease in levels of bacteria and other contaminants identified as priority concerns in this Plan) |
| | | | | | • a decrease in loading of priority contaminants being delivered by the Creek into Hamilton Harbour (measured in kg/day) |
| | | | | | • improved creekbed sediment quality (decrease in levels of metals and PCBs) |
| | | | | | • an increase in the number of fish species (preferably native) |
| | | | | | • an increase in the number of species of invertebrates that require good water quality |
| | | | | | • overall improvement in stormwater management |
| | | | | | **THEME: Social Development and Health** |
| | | | | | • watershed air quality rated good or very good every day |
| | | | | | **THEME: Economic Development and Land Use** |
| | | | | | • planning documents include policies aimed at achieving Watershed Plan goals |
| | | | | | • programs to enhance infiltration are implemented in priority areas |
| | | | | | **THEME: Community Action, Education and Awareness** |
| | | | | | • increase in numbers of people participating in natural / cultural history walks or lectures |
| | | | | | • increase in numbers of residential or non-residential property owners actively undertaking private land stewardship activities |
| | | | | | • increase in students visiting Watershed Interpretive Centre at Elizabeth Bagshaw School |

**Grading Key**

A - Goal or Target Achieved
B - Progress toward Goals/Targets
C - No change
D - Movement away from Target
E - Indicator has dropped below baseline condition

**Comments**

## Red Hill Creek Watershed Planning Process - Stakeholders Collective Guidance

Early in the process the Stakeholders created a set of principles and guidelines for the planning exercise. It provided a framework for all activities undertaken in the development of this Plan.

*Watershed planning for the Red Hill Creek is a participatory process integrating inventory, analysis, goal setting and action planning for the entire area drained by the Red Hill Creek and its tributaries. We the Stakeholders have developed this material as our collective guidance for the work before us.*

### *A. PURPOSE OF THE PLAN*

*The Red Hill Creek Watershed Plan will provide a framework for managing change to guide planning, management and stewardship decision-making at all levels, from senior governments to individual residents of the Watershed. The Plan is intended to foster long term environmental, social and economic sustainability.*

*The Watershed Planning process requires an understanding of the current state of a watershed including its physical and social characteristics. Future decisions and actions will be assessed against this current condition. The process presents an opportunity for strengthening communication between interests and fostering co-operative actions. A compendium of action initiatives will be an important outcome of this exercise.*

### *B. GROUND RULES*

*1.0 Relationships*

*1.1 While the Region of Hamilton-Wentworth remains committed to construction of the North-South Expressway, participation in watershed planning for Red Hill Creek does not infer support for the Expressway.*

*1.2 There should be broad-based participation in the preparation of the plan from community groups, university, business, governments, schools and landowners.*

*1.3 Building long-term relationships with each other through the Watershed is vital - thus people should know how to investigate matters, where to go for help, and how the community can play its role in long-term management of the Watershed.*

*1.4 Technical people should be available to help define problems and to help seek sensible solutions.*

*1.5 Clarity of communication and using everyday language is required of all participants.*

*1.6 All participants and stakeholders in the process will be treated with respect.*

*1.7 Government agencies can only participate commensurate with their mandate and legal responsibilities, current staff levels and expertise.*

*1.8 The Watershed Plan should not hold community groups accountable for implementing actions which are rightfully the responsibilities of government. This does not rule out the formation of partnerships between government and non-government organizations.*

*2.0 Process*

*2.1 We should fully avail ourselves of the extensive work and studies done by many organizations and community groups, thus avoiding duplication or waste. Participants are committed to the sharing of information.*

*2.2 Avoid a lengthy process, be straight forward and be action-oriented in planning. We will strive for consensus-based decision making throughout the process.*

*2.3 Approved policies and plans including official plans, secondary plans, the Niagara Escarpment Plan, Environmental Assessments shall be acknowledged in the Watershed Plan.*

*2.4 The process should bring technical and community people and their knowledge together.*

*2.5 The process should develop a vision or clear goals for the Watershed Plan.*

*2.6 The plan should set directions and be a living document that is revisited regularly*

2.7 *The process should result in a document that informs and guides community planning, programs, projects and other decision-making.*

2.8 *The plan should be concise and provide specific direction.*

3.0 *Technical Ground Rules*

3.1 *The Watershed Plan should be ecosystem-based and address a range of technical matters including as a minimum:*

a) *active and passive recreation including fishing, accessibility and design of hiking/biking trails and linkages with neighbourhoods and surrounding areas;*
b) *stormwater management including implications of downstream impacts from development in the Water-shed, flooding, erosion control, and channel stability;*
c) *natural heritage conservation and management including terrestrial and aquatic habitat, restoration or degraded habitat, wetlands, migratory birds, flora and fauna, fish habitat and migration;*
d) *ground and surface water quality including sources and quantities of pollutants entering watercourses.*
e) *a profile of the Watershed community including demographic and other socio-economic information as well as use and enjoyment of the Watershed.*
f) *transportation and utility infrastructure*

3.2 *A "State of the Watershed" Report will be produced early in the watershed planning process. This report will provide comprehensive baseline information on current conditions in the Watershed against which specific targets will be developed and impacts of current and future projects and activities assessed.*

3.3 *The Watershed Plan should be done promptly so as to meaningfully influence the detailed design and mitigation of negative impacts associated with the Expressway, including;*

a) *stream protection and bioengineering;*
b) *landscaping and aesthetic enhancement of trails;*
c) *improved access to industrial, commercial and residential areas;*
d) *rehabilitation of disturbed areas;*
e) *open space and recreational use.*
f) *air and water quality*

3.4 *Special technical problems that need consideration are:*

a) *Ottawa Street landfill site*
b) *Greenhill sewer outfall*
c) *Queenston Road fish barrier*
d) *Felker's Creek Valley and ravine*
e) *Illegal garbage dumping*
f) *Sewage Treatment Plant discharge*
g) *Q.E.W.*

3.5 *Technical information and data requirements will be established by the stakeholders.*

*C. PROCESS*

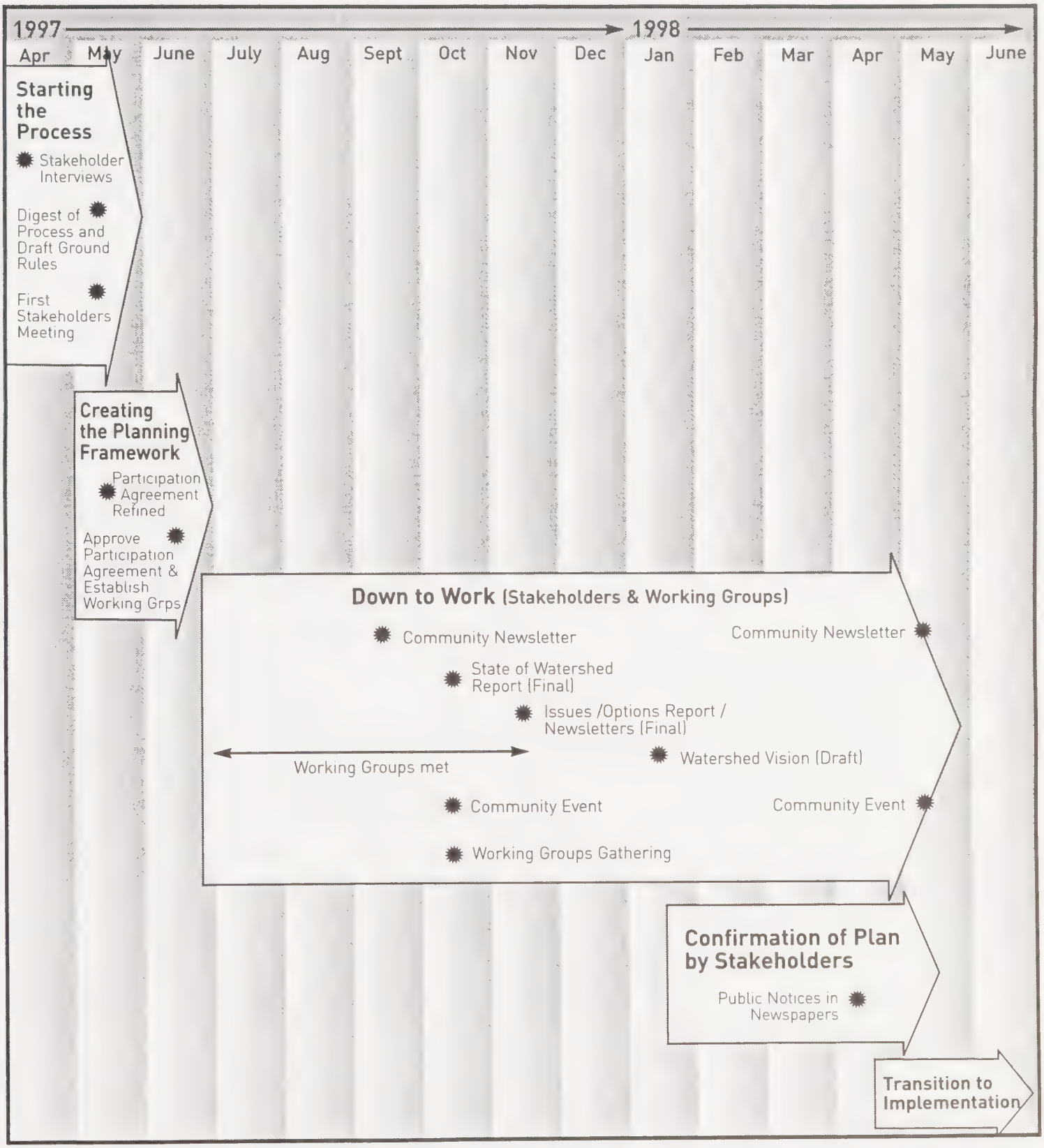
*The objective of the Watershed Planning Process is to aggressively pursue a first generation Watershed Plan. The process will incorporate the following areas.*

*D. PRODUCT*

*The first generation Watershed Plan will be concise to facilitate distribution to a wide variety of interests. The document will be user friendly and geared to a broad audience including non-technical readers. Detailed background and technical reports will be available as appendices with a more modest distribution. The Watershed Plan will incorporate the following elements:*

- *Background on watersheds and watershed planning*
- *Description of context for Red Hill Watershed Planning exercise*
- *"State of the Watershed" Baseline Report*
- *A Vision for the Watershed (Discussion of Shared Values)*
- *Key assumptions about the watershed*
- *Specific goals and targets*
- *Compendium of actions*

Chart 1: Major Activities and Steps in the Watershed Planning Process



# Matters To Be Considered in the Future

The following issues or questions were not addressed by the Stakeholders in this First Generation Watershed Plan. They are recommended for detailed consideration and identification of appropriate actions in further watershed planning activities:

## Trails, Open Space, Recreation and Cultural Heritage

1. The role of community organizations and institutions in promoting cultural heritage through displays of heritage/archaeological artifacts.
2. The impact on the Watershed of increasing use of the Bruce Trail and Lake Ontario Waterfront Trail should be assessed.

## Habitat Protection and Restoration

1. A comprehensive inventory of terrestrial resources in the upper Watershed is needed.
2. Wildlife utilization of the Niagara Escarpment, Lake Ontario Shoreline, and Upper Watershed require further investigation.
3. The desirability of fostering populations of introduced species such as Rainbow Trout and Chinook Salmon in the Watershed.

## Water

1. The impact of degraded water quality on Windermere Basin.
2. The impact of air quality on stream water quality.
3. Improving the quality of Woodward Sewage Treatment Plant effluent.
4. Long range planning and potential partnerships to create ponds on golf courses.
5. Enhancement of base flow in the Watershed's creeks.
6. Identification of the source of nitrates in Hannon Creek.
7. Further investigation of the deposition process of PAH and metals is required. At what rates are PAH and metals washed off during rainstorms?
8. The contribution of closed landfill sites to water quality concerns.
9. A comprehensive survey or inventory of known contaminants sources in the Watershed is required.
10. Adapting RAP goals into quantitative targets for the Watershed.

## Social Development and Health

1. Creation of a social development strategy for the Watershed.
2. The major sources of air pollution in the Watershed have not been identified.
3. The role played by diesel trucks in terms of their contributions to PAH, benzene and particulate levels is not understood and requires further investigation.
4. The role played by the Watershed's natural vegetation in filtering air pollutants such as carbon monoxide, controlling dusts and balancing atmospheric oxygen.

## Economic Development and Land Use

1. Development of an economic strategy for the Watershed.
2. The capacity of sewer system to accommodate increased densities in built up areas requires further investigation

## Who to Contact?

(Contact numbers will be provided.)

## Additional Information about Red Hill Creek Watershed

The documents and publications listed below were produced during the Red Hill Creek Watershed Planning Process. They are available for viewing by the public at various locations including:

- the Hamilton Library Main Branch, the Stoney Creek Library and selected branches of the Hamilton and Wentworth Library Systems
- the Hamilton Region Conservation Authority
- the Region of Hamilton-Wentworth Special Projects Office
- Mills Library, McMaster University

Please contact the Hamilton Region Conservation Authority for more information about these documents.

**1. Red Hill Creek Watershed Planning - State of the Watershed Report** (October 1997)

**2. Technical Background Reports prepared for the Red Hill Creek Watershed Planning Process**. All reports were finalized in late 1997.

- Surface Water Report - Phillips Planning and Engineering Ltd.
- Water Quality Report - Phillips Planning and Engineering Ltd.
- Hydrogeological Inventory - Terraqua Investigation Ltd. in association with Blackport and Associates
- Known and Potential Contaminant Sources - Dillon Consulting Limited
- Fisheries - C. Portt and Associates
- Terrestrial Resources - Dougan and Associates
- Soils and Geology - Peto MacCallum Ltd.
- Cultural Heritage - Archaeological Services Inc., Unterman McPhail Cuming Associates in association with Historica Research Limited
- Land Use - Region of Hamilton Wentworth Special Projects Office

**3. Opportunities Reports**

These reports outline a range of potential actions to enhance, rehabilitate or restore conditions in the Watershed.

- Terrestrial and Aquatic Resources: Draft Opportunities Report - Dougan and Associates
- Water Opportunities Report - Phillips Planning and Engineering Limited

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